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ABSTRACT

One of a series devoted to career education in transportation, this guide, which is intended for use by teachers in grades 9-10, presents a program for the exploration of existing and emerging careers in transportation. Section I gives an introduction to career education and its four progressive phases: career awareness, orientation, exploration, and preparation. Section II stresses the use of resource materials for occupational information on transportation careers. Section III explains the roles of the educational, family, and industrial participants in a career exploration program. Section IV outlines the program plan which is designed as an individualized and performance-based instructional system. Eleven objectives are identified for the program: (1) communication skills, (2) transportation's contribution to society, (3) changing employment, (4) job operations, (5) employment outlook for specific fields, (6) skills required, (7) job descriptions, (8) career ladders, (9) life styles, (10) entry level requirements, and (11) career planning. The learning activities necessary to achieve these objectives are classified as vicarious, simulation, or experiential, and the appropriate type is discussed for each objective. (A separate student manual, CE 013 880, contains the activity worksheets.) For the teacher, evaluation of the program is emphasized as the concluding step in the plan. Section V provides a bibliography of resource materials available on transportation, including books, journals, government publications, and films. (ELG)

ED159308

EXPLORATION OF CAREERS IN TRANSPORTATION

TEACHER'S GUIDE

U.S. DEPARTMENT OF HEALTH
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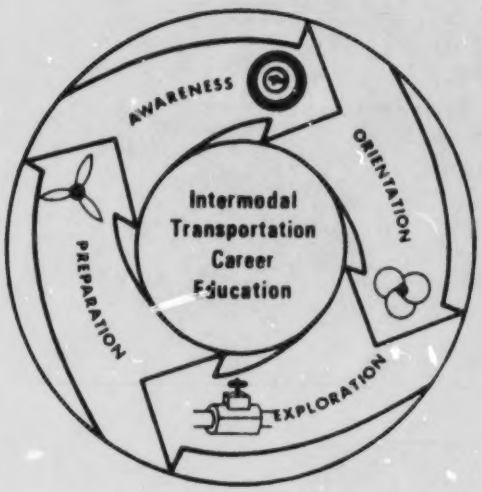

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THE TRANSPORTATION CURRICULUM PROJECT

Division of Vocational Education
Ohio Department of Education

EXPLORATION
OF
CAREERS IN TRANSPORTATION

TEACHERS GUIDE

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PREFACE

Increased public demand for more and better transportation has resulted in an increased demand for workers with more and better training. Recognizing the need for school curricula directed toward preparing young people for these opportunities, this guide presents a program for the exploration of existing and emerging careers in the field of transportation. The program is designed for use in junior and senior high schools but its use elsewhere is to be encouraged as well. This guide is intended primarily for the teacher who is responsible for the transportation career exploration program. It has been written and reviewed by professionals from the transportation industry, from career education and from transportation education; people who sincerely believe that career exploration is important for young people. The material presented is factual, accurate and reflects the most up-to-date thinking in both transportation and career education.

The compilers of this guide tried to anticipate the needs and problems in implementing an innovative program of this kind. There is probably no doubt that we have fallen short. But, fortunately, there is one factor in the American classroom that can usually succeed in the most difficult of conditions; that factor is YOU, the teacher, a guide and helper who is actually there with the students. In implementing this program you will share in the process of exploration with your students. Ultimately, their success will be your success.

While this guide represents hundreds of hours of effort and years of experience by dedicated persons in education and the transportation industry, not every bit of information nor every paragraph of advice is intended to be accepted on faith. It is, by design, a GUIDE to be used and supplemented by local inputs to

satisfy local educational requirements. Attempts have been made in compiling this guide to anticipate the needs and problems of the school administrator who will decide to adopt the program, the teacher who will implement and operate it and the other school people who will serve the program as support personnel. Success of the program will depend upon these people doing their jobs and will be measured by the success of the students exploring careers in transportation.

Edwin T. Petrie
Project Director

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PROJECT PERSONNEL

Project Director

Edwin T. Petrie
Division of Vocational Education
Ohio Department of Education

Associate Project Director

Tom Wood
Division of Vocational Education
Ohio Department of Education

Workshop Director

Franklin G. Bouwsma
Vice President
Instructional Resources
Miami-Dade Junior College
Miami, Florida

Conference Manager

Robert H. McCabe
Executive Vice President
Miami-Dade Junior College
Miami, Florida

Editor-in-Chief

Robert F. Mines
Dean of Research and Planning
Miami-Dade Junior College
Miami, Florida

WRITERS

Harold Allen, Chairman
Transportation Department
University of South Florida
Tampa, Florida

William Conway, Vice President
Career Programs
Southwest College
Chicago, Illinois

Virginia Gentle, Assistant
Professor of Television
Miami-Dade Junior College
Miami, Florida

Anne Hayes, Research Associate
Transportation Safety and
Consumer Education
Center for Vocational and
Technical Education
The Ohio State University
Columbus, Ohio

Ernest Jaski, Professor
Merchandising and Marketing
Southwest College
Chicago, Illinois

David Jenrette, Assistant
Professor of Biology and
Physics
Miami-Dade Junior College
Miami, Florida

James Kilbride, Professor of
Psychology
Miami-Dade Junior College
Miami, Florida

Gerald Mellenthin, Assistant
Professor
Business and Data Processing
Department
Harper College
Palatine, Illinois

David Michaels, Professor of
Management
Business Careers Division
Northern Virginia Community
College
Annandale, Virginia

Peter E. Mogensen, Jr.,
President
United Educational Resources,
Inc.
Racine, Wisconsin

Wm. Morton, Jr., Asst. Professor
of Transportation
Institute of Transportation,
Travel and Tourism
Niagara University, New York

Marjorie H. Penseyres, Assistant
Professor of Transportation
Institute for Transportation,
Travel and Tourism
Niagara University, New York

Ben Perry, Associate Chairman
Institute of Transportation,
Travel and Tourism
Niagara University, New York

Donald Rathbun, Director
Manpower Research Information
American Vocational Association
Washington, D. C.

Frank S. Klein, Instructor
Career Exploration Program
East High School
Akron, Ohio

Oliver H. Laine
Aviation Education Specialist
Federal Aviation Administration
U. S. Department of Transportation
Washington, D. C.

Mervin K. Strickler, Jr., Director
General Aviation Education
Federal Aviation Administration
U. S. Department of Transportation
Washington, D. C.

George Ziener, Chief
Instructional Development Section
Institute for Air Pollution Training
U. S. Environmental Protection Agency
Research Triangle, North Carolina

ADVISORS AND REVIEWERS

Mel Andrews, President
Transport Protective Assn.
Los Angeles, California

John Barrons, Assistant Superintendent Educational Operations
Grossmont Union High School District
LeMesa, California

C. Stanley Bowers
Vocational Counselor
Columbian High School
Tiffin, Ohio

H. Jackson Darst, Educational Advisor
Special Assistant to the Commandant
U.S. Army Transportation School
Fort Eustis, Virginia

D. K. Miller, Assistant Manager
Personnel Department
Southern Pacific Transportation Company
San Francisco, California

Mary Jo Oliver
Aviation Education Specialist
Federal Aviation Administration
U. S. Department of Transportation
Washington, D. C.

John H. Osborne, Vice President
Buckeye Pipe Line Corporation
New York, New York

E. Albert Ovens, Dean
Academy of Advanced Traffic
New York, New York

Ronald D. Daugherty, Director
Highway Safety Occupational
Program Development
Center for Vocational and
Technical Education
The Ohio State University
Columbus, Ohio

Philip Hughes, Director
University Research Training
Division
Urban Mass Transportation
Administration
U. S. Department of Trans-
portation
Washington, D. C.

Paul Jansen, Director
Marine Engineers Beneficial
Association School
Toledo, Ohio

Donald V. Keyes, Associate
Dean
Academy of Advanced Traffic
New York, New York

Lt. Commander W. T. Leland
Chief of Training
U. S. Coast Guard
U. S. Department of Trans-
portation
Washington, D. C.

George Lowe, Acting Director
Office of Environmental
Education
U. S. Office of Education
Washington, D. C.

Paul McDonald, Corporate Manager
General Motors Training Centers
General Motors Corporation
Detroit, Michigan

Vernette D. Petrie, Instructor
Social Studies
Old Fort High School
Old Fort, Ohio

Jackson Rogers, General Manager
Nationwide Traffic Service
Bureau
Miami, Florida

Tom Samuels, Manager
General Motors Training Center
Fairfax, Virginia

Jerry Schorr, Director
Cargo Marketing Development
Eastern Airlines
Miami, Florida

James Springrose, Vice President
Transportation
Cargill, Inc.
Minneapolis, Minnesota

Jacqueline Waide, Chairman
Air Transportation Technology
Ohlone College
Fremont, California

Walter Zaharvitz, Executive
Director, National Aerospace
Education Association
Washington, D. C.

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I

INTRODUCTION TO CAREER EDUCATION

Career Education refers to education that is designed to provide experiences to help individuals prepare for, enter, become established and advance in, a self-satisfying and productive career. It encompasses those educational experiences which, beginning in early childhood, develop the skills, attitudes and understanding necessary to successful career selection, assimilation and retention.

Dr. S. P. Marland, Jr., Commissioner of the U. S. Office of Education, has observed that: "Educators must be bent on preparing students either to become properly and usefully employed immediately upon graduation from high school or to go on to further formal education. The student should be equipped occupationally, academically, and emotionally to spin off from the system at whatever point he chooses — whether at age 16 as a craftsman apprentice, or age 30 as a surgeon, or age 60 as a newly trained practical nurse," (DHEW, OE-72-39, 1971, p.3)

In citing the need for career education, Commissioner Marland has referred to it as eliminating the "artificial separation between things academic and things vocational." (Marland, 1971)

It is the fusing of academic, vocational and avocational experiences in a manner which will enable the individual to identify, define and realize personal, social and career related goals.

The Need for Career Education

The United States Office of Education has pointed out that "it is a rare high school that equips all of its students to make the choice upon graduation of entering the job market with a saleable skill or of continuing their education. Too often the graduate has neither option, let alone the opportunity to select one or the other. Nearly 2.5 million students leave the formal education system of the United States each year without adequate preparation for a career. In 1970, ... only about one high school student in six was enrolled in occupational education. More persons are graduating from a four-year college with a bachelor's degree than there are jobs for degree holders. By the end of this decade eight out of every ten jobs in America will not require a baccalaureate degree. More appropriate curriculums must be developed, validated, and installed, and they must be used more realistically if we are to meet the needs and desires of students and serve the purposes of society." (DHEW, OE-72-39, 1971, p.1)

Programs in career education offer a response to this challenge since the fundamental concept of career education is that all education and experiences — curriculum, instruction, counseling — should be geared for economic independence and an appreciation for the dignity of work.

Goals of Career Education

The following Career Education goals are excerpted from a working paper entitled *Career Education: Descriptions and Goals*, which was prepared by the U. S. Office of Education July 29, 1971.

1. To make all education subject matter more meaningful and relevant to the individual through restructuring and focusing it around a career development theme.

2. To provide all persons the guidance, counseling, and instruction needed to develop their self-awareness and self-direction; to expand their occupational awareness and aspirations; and to develop appropriate attitudes about the personal and social significance of work.

3. To assure the opportunity for all persons to gain an entry level marketable skill prior to their leaving school.

4. To prepare all persons completing secondary school with the knowledge and skills necessary to pursue further education or to become employed.

5. To provide services for placing every person in the next step in his development whether it be employment or further education.

6. To build into the educational system greater utilization and coordination of all community resources.

7. To increase the educational and occupational options available to all persons through a flexible educational system which facilitates entrance and re-entry either into the world of work or the educational system.

Career Education as a Comprehensive Educational Program

Career education is a comprehensive educational program which begins in grade 1 or earlier and continues through the adult years. For elementary and secondary education, the program includes a restructuring of basic subjects, grades 1-12, around the theme of career development, including opportunities and requirements in the world of work. The basic academic subjects, such as mathematics, science, social studies and language arts become more relevant because the student is helped to see their relationship to future career goals. In the elementary school, students become aware of the wide range of jobs in our economy, and the associated societal roles. In junior high school students explore specific clusters of occupations through hands-on experiences and field observation, as well as classroom instruction. In senior high school, students prepare for job entry through classroom, laboratory and cooperative education activities or prepare for further education or both. Placement in a job or in further education are options open to all students. At the post-secondary and adult levels, opportunities are provided for entrance and exit at any level, at anytime, in the individual's career development.

Extensive guidance and counseling activities assist the student in developing self-awareness and in matching his interests and abilities against potential careers.

Viewed in this way career education may be described as consisting of four phases:

Phase I - Career Awareness

Phase II - Career Orientation

Phase III - Career Exploration

Phase IV - Career Preparation

Each of the four phases is described briefly below. The entire career education program is shown pictorially in the figure on the following page. Frequent reference to the figure will serve as an aid to understanding the text material.

Career Awareness

Career Awareness is that stage in the Career Education process at which the child is made aware of self, introduced to the world of work, encouraged to respect others and their contributions to the world of work and stimulated to correlate awareness of self to various occupational roles within the world of work. Career Awareness includes the following basic objectives.

The student will:

1. *Formulate generalizations toward developing a sound self concept.*

   By — beginning to consider the ways by which individuals can be described; defining self in terms of these special characteristics; differentiating from others; etc.

2. *Begin to examine the world of work.*

   By — formulating general definitions for work; examining a variety of individual occupational roles within the world of work, either vicariously or through some indirect or direct contact; viewing the relationships between interests and work; personal needs and work and leisure activities and work; etc.

3. *Develop a basic respect for others and their contributions to the world of work.*

   By — playing a variety of roles designed to encourage empathetic behavior; directing this empathy toward personal thoughts, feelings and activities,

especially those which are work-related; studying such basic concepts as goods, services, consumers and producers; understanding the basic importance of work in meeting the basic needs of society; etc.

4. Begin to correlate understanding of self with various occupational roles in order to initiate a motivation toward participation in the world of work.

By — "trying on" some of the various roles performed by persons engaged in work; considering the ways in which interests and abilities can be considered in determining desirable occupational roles; learning of the interrelationships of various occupations in terms of similarities of skills, functional roles, economic categorization; etc.

The Career Awareness phase is generally referred to as including grades K through 6. However, it should be noted that grade level designations are intended only to indicate the usual or desirable occurrence of each stage in a person's overall development. To provide for individual differences, grade level indications must not be interpreted as restrictive.

Career Orientation

Career Orientation is that stage of the Career Education process at which students clarify the concepts of self and the world of work and attempt to establish a relationship between the two. This attempt to orient self to the world of work (in terms of specific occupational alternatives) is most successfully accomplished through involvement with exploratory behavior in varying degrees. Career Orientation includes the following basic objectives.

The student will:

1. Clarify self concept.

By — developing an understanding of the need to begin planning; considering the role of work in individual personality development; evaluating work's role in satisfying physical and psychological needs; etc.

2. *Understand the structure of the American economic system and the interrelationships of its various sub-systems.*

By — understanding fundamental economic concepts and fundamental principles of the manpower market; considering the changing nature of the manpower market, the changing meaning of work, and the relationships of education and training to work; viewing the sub-systems of the American economy at work; etc.

3. *Relate self to the world of work.*

By — understanding the need to plan for participation in the world of work; considering such things as self interests, abilities, aptitudes and needs in relationship to available occupational information; developing individual inquiry and problem-solving skills; etc.

4. *Formulate a tentative plan.*

By — considering desirable occupational roles and requisite education and training; investigating availability of desirable employment and educational and training requisites; integrating various occupational, educational and training alternatives on the basis of desirability and availability; formulating a tentative career plan on the basis of all the above considerations, etc.

The Career Orientation phase generally refers to grades 7-8. The crucial point in the phase comes at the end of junior high school when the student is confronted with the necessity for making an important curriculum decision prior to entering high school.

Career Exploration

The Career Exploration phase of Career Education, characterized by trial and hypothesis testing behavior, is one in which students actively explore real occupational roles. Problem-solving skills are applied to relating the feasibility and appropriateness of self characteristics to the occupational roles being explored and acquiring knowledge of and considering alternate occupational and educational paths. Career Exploration includes the following basic objectives.

The student will:

1. *Exhibit problem-solving and decision-making skills.*

By — recognizing the future implications of various educational and occupational alternatives; exploring various occupational clusters, relating self concepts to groups of occupations and individual occupations via occupational information and first-hand experiences; etc.

2. *Explore various occupational roles.*

By — selecting specific desirable occupations for investigation; experiencing various aspects of specific occupations via simulation activities or direct contact; coping with work tasks and performing in a work situation in a manner reflective of an understanding of the constituent elements of work effectiveness; etc.

3. *Evaluate realities of educational-occupational preferences.*

By — realistically assessing personal (abilities, interests, etc.), social (race, religion, factors which might affect career choice, successful assimilation and advancement potential; reformulating career plans, as well as requisite educational and training considerations; etc.

4. *Reformulate tentative career plan in light of exploratory experiences.*

By — understanding the increasingly critical nature of accurate planning; utilizing problem-solving skills acquired through exploratory behavior to reassess and restructure overall career plan (based upon desired and available educational and occupational alternatives); deciding upon a program of work or education beyond the exploratory phase; etc.

The Career Exploration phase is generally associated with grades 9-10. It is imperative that students be made aware of the increasing importance of planning and become directly involved with activities which will develop the skills and knowledge essential to successful planning.

Career Preparation

Career Preparation is the phase of Career Education during which students develop specific skills, technical knowledge, sound work habits and attitudes related directly to a specific occupation or family of occupations. These are developed through direct involvement in occupational experiences, either within the setting of the school or without. Career Preparation involves the following basis objectives.

The students will:

1. *Prepare to implement a chosen career plan.*

   By — searching occupational and educational information and determining appropriate educational and vocational objectives; engaging appropriate available experiences for skill and knowledge acquisition; completing appropriate curricular offerings available; etc.

2. *Obtain initial employment or enroll in appropriate requisite educational program(s).*

   By — determining specific occupation (or occupational family) for which employment and requisite education beyond high school (if any) is to be sought; applying, with assistance from guidance personnel, for appropriate educational or occupational opportunity; completing appropriate curriculum requirements prior to job or post high school educational assimilation; etc.

Career Preparation may be secured through a number of differing approaches: high school cooperative programs, correspondence courses, adult education offerings, technical institutes, community and four-year college programs and post graduate university programs. This phase generally refers to the last two years of high school (grades 11-12) and beyond.

Summary

In summary, career education implies a comprehensive structuring of the entire school program around a career development theme. It begins with the development of self concepts, desirable attitudes towards others and an understanding of and appreciation for work; progresses through orientation to the

world of work, exploration of and preparation for specific occupations; and culminates in attainment of specified occupational goals.

II

INTRODUCTION TO TRANSPORTATION

Basic to the U. S. Office of Education's approach to the development of career education curricula is the occupational cluster concept, whereby occupations are grouped together on the basis of a variety of criterion. Transportation is one of fifteen occupational clusters identified for Career Education curriculum development. Transportation careers could be organized in a variety of different ways: according to mode (air, sea, land and pipeline); on the basis of knowledge and skill requisites; on the basis of commonality of tasks performed; etc. The Transportation Curriculum Project has chosen to utilize the occupational grouping entitled *Intermodal Transportation Careers: A Guide for the Development of Educational Programs.*[1] This publication defines intermodal careers as those where requisite skills are not constrained to one mode or means of transportation, but where job families and a ladder of progression or promotion are built around common skills and knowledges applicable within various modes. Twelve occupational groups have been defined within the area of transportation careers. These are: Data Management Services, Distribution Services, Environmental Services, Maintenance Services, Management Services, Marketing Services, Passenger Services, Vehicle Operations Services, and Vehicle Supportive Services.

Thus, within the intermodal framework a career in Data Management Services as a computer operator might be located within any of the four modes — air, land, sea and pipeline — or include more than one of these modes of transportation, as in the case of a governmental employee concerned with the movement of goods via air, rail and truck from one destination to another.

A thorough analysis of career opportunities in transportation is available in the document *Intermodal Transportation Career Education, An Occupational Cluster Paradigm,*[2] which contains specific occupational information on hundreds of occupations within the aforementioned twelve intermodal occupational groups. This technical document has been designed as a resource publication for Orientation to, Exploration of and Preparation for careers in Transportation. It was compiled and edited by a staff of transportation and education experts, many of whom continue to serve consultative roles as members of the Transportation Curriculum Project's National Advisory Committee.

The information contained in this resource manual should be used in varying ways, depending upon each student's individual progress. Students who are involved in Orientation to Transportation careers will probably use the technical publication sparingly. As these students progress into Exploration of Transportation careers they will refer to this document first to gain enough background information in order to facilitate making a choice of specific occupational groups to be explored. After students have isolated several occupations or groups of occupations for Exploration, they will supplement in-depth experience-oriented Exploration with the occupational information contained within the technical document. Career Preparation students might use this technical information as a springboard to attaining further understanding of specific occupations via self-directed exploratory behavior.

The efficient utilization of available information is the shared responsibility of teacher and student. A wealth of resources exist. Identification and utilization of these should be fostered throughout the career education process. The remainder of this teacher's guide is aimed at promoting a marriage of appropriate career education objectives with available resources and suggesting means for achieving these objectives through sound use of as many resources as possible. Though documents such as aforementioned resource publications, the Dictionary of Occupational Titles, the Occupational Outlook Handbook, career guidance briefs and others reflect considerable effort and thought in the organizational schemes they propose, students should not be discouraged from developing their own organizational frameworks or fulfilling self-created objectives for Orientation, Exploration and Preparation.

Self initiative is just as vital to each separate phase of career planning as it is to the process as a whole. Therefore, students should be actively encouraged to question organizational schemes and restructure where appropriate. The framework presented

herein for career Orientation, Exploration and Preparation should be viewed more as a compass, pointing out direction, than as a map, defining specific routes. Finding the specific routes to Orientation, Exploration and Preparation should prove as rewarding to students as the end product of the search — specific knowledge about and contact with occupations or groups of occupations. The key ingredients to successful career education are: The development of satisfactory self-concepts and their thoughtful consideration in attempting to define appropriate avenues of investigation and conducting these investigations. Ideally, the exploratory behaviors exhibited by students in their investigation of the world of work and its component parts should be motivated by the desire to learn about themselves and the world of work and, eventually, to achieve successful relationships between the two.

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[1] *Intermodal Transportation Careers: A Guide for the Development of Educational Programs*, Division of Adult, Vocational and Technical Education, U. S. Office of Education, 1971.

[2] *Intermodal Transportation Career Education, An Occupational Cluster Paradigm*, Transportation Curriculum Project, Division of Vocational Education, Ohio Department of Education, 1972.

This technical publication is designed to be used as a resource and reference book in conjunction with this teacher's guide. Constant reference to it will be made in the following chapters.

III

THE PROGRAM PARTICIPANTS AND THEIR ROLES

The success of your program for exploring careers in transportation depends upon a great number of people assisting the students in achieving the objectives of their individualized exploration programs. The students themselves have an unusual role, and their parents, the school staff, people from business, industry and the community must assume definite roles to provide this assistance. One of your primary tasks as a career exploration teacher will be to coordinate the roles of all the people with which your students come in contact. The purpose of this chapter is to provide you with a guide to each of these roles.

Most of these roles will be unfamiliar to the people who will assume them. Your job will be to see that they become familiar with the things you and the students will expect of them. The better each participant understands his role, the more smoothly your program will run.

The following descriptions are written in a general way. You may use them as they appear or revise them for adaptation to your local needs. One idea for informing participants would be to hand each a brief written description of his role at an initial meeting prior to the beginning of your program. This would provide advance information that may be reviewed immediately prior to actual student contact.

THE CAREER EXPLORATION TEACHER

As the teacher, you are the center of all career exploration activities. It is to you that the students will first look for assistance and guidance. This means that your own attitude will be crucial to the success of the program. Are you up to it? Question yourself...."How interested am I in the program? Am I willing to take on all the responsibilities? Am I enthusiastic about the program and what it can do for the students? Can I get the students to share with me in this enthusiasm and interest?"

A number of research studies have shown that the best determinant of success in innovative educational programs in invariably teacher attitude. When the teacher is enthusiastic, the innovation works. When the teacher doesn't care, it fails.

The roles described below are meant as suggestions to aid you in conducting a successful program of exploring careers in transportation. In implementing the program you will no doubt find many more roles to fill and perhaps you will find it necessary to alter some of these to adapt the program to your needs.

Director-Coordinator of Student Experiences

This is perhaps the most important role you will assume. Your students will need direction to initiate an individualized exploration plan by selecting objectives and planning activities and experiences necessary to meet their objectives. It will also be necessary for you to assist them in carrying out the plan. Your greatest assistance will be in helping them interpret their experiences to see if they meet the intended objective. It will probably also be necessary for you to coordinate a number of students' experiences to see if they may be done together, in groups, to save time and resources.

Supporter-Facilitator

Career exploration will provide your students with the opportunity to meet with some failures; things like films that don't arrive on time, canceled appointments and such other trivia that make life so interesting and frustrating. You should not attempt to place the blame for any failures on any student (no matter how richly it may be deserved). Rather, your attitude should be something like, "Well, that didn't work out. Do you have any other ideas? If not, why don't we try this..." Remember

that one of the primary characteristics of a truly open exploration environment is that students are allowed to fail. Columbus sailed west to find China and never did. Was his exploration a failure?

Liaison

Successful career exploration depends upon communication with, and the cooperation of, parents, students, counselors, faculty, staff, administrators, business, industry and the community. Part of your role will be to coordinate the roles of these other people as well as to keep them informed as to what they need to do to insure the success of the program.

Evaluator

One continuing aspect of the program will be the measurement of its success. Are the activities and experiences leading to attainment of the objectives? Are some of the activities more effective or efficient than others? Are the goals of the program realistic and attainable? Whether evaluation is formal or informal, it is a necessity and this part of your role must be kept in mind.

THE STUDENT

The student should have some commitment to exploring possible careers in transportation in order to derive any benefit from this program. This does not necessarily mean that he must be thoroughly convinced that transportation is the only career possibility in the world. Far from it; he will probably be exploring in other clusters as well. What it does mean, however, is that he should be willing to study the materials, participate in the activities, gain experiences and complete the assignments. The student should therefore be willing to assume, within his capabilities, several important roles.

The Active Learner

The active learner assumes a great deal of the responsibility for his own career exploration. He does not wait to be told exactly what to do and how to do it. He can take a few general directions and follow through on his own. He possesses at least the fundamental research skills (using the card catalog and Reader's

Guide in the library, letter writing, telephoning, etc.). He recognizes that his success, partial success or failure depends primarily upon himself. You, as the teacher, should recognize that not all students will meet this ideal active learner's role. but you should encourage each student to assume it to the limit of his capabilities.

The Questioner

Just finding information is not sufficient to the questioning student. When information sources are not complete he is willing to write for more data, or ask a question, or otherwise obtain additional information. He doesn't accept things without attempting to verify them and will use many sources to obtain this verification. Every student should be able to assume the role of a questioner to some degree and you should make every effort to get them to do it.

The Explorer

In most school "courses," the student relies on the instructor to provide the learning activities and materials. In a well-run career exploration program the student must have no such reassurance; the teacher cannot be with him directing every step along his way. The dictionary definition of exploration implies self initiative to delve into the unknown. You should indicate this to the students from the beginning of the program and continue it in your direction and coordination of their activities and experiences.

The School Representative

In business, industry and community contacts, both inside and outside of the school, the student has a special responsibility in that he is representing his school as well as himself. The successful acceptance of this role should result in his putting extra effort into creating a good impression that will reflect upon himself and the school. This will go a long way toward helping to create a welcoming atmosphere for future students who will go out and business representatives you will have in.

THE PARENT

To help their children work toward becoming adults parents should provide them with positive reinforcement. The exploration of careers in transportation provides an opportunity for parents to support and encourage their children toward maturity. Prior to contacting parents you might read the booklet *The Parent's Role in Career Development* (See Chapter V, General Resources for details) to obtain initial ideas. You might consider helping the students prepare a regular newsletter to parents informing them of your activities and encouraging them to display an interest in their children exploring transportation careers by helping in various ways. For instance, whenever possible, parents may do such things as:

a. Help create a real learning and exploration environment at home. Parents should strive toward loving, sharing, supportive, confidence-inspiring relationships with their children to provide a tension-free atmosphere that is conducive to productive study and achievement.

b. Provide physical facilities necessary to aid their children in home study. This can include providing a desk area, bookshelves, etc. It might include releasing the TV set to them when a program related to careers in transportation is being shown. Even turning the TV or radio volume down or completely off should be considered if the student must study nearby.

c. Positively encourage the entire concept of career exploration by trying not to prejudice or influence the student into a career which is against the child's abilities, interests, and capacities.

d. Accompanying students and furnishing transportation for field trips, to the library or other out-of-school locations.

THE ADMINISTRATOR

The administrator's primary role in the exploration of careers in transportation is to combine local goals, resources, facilities, and personnel into the best possible program for the students. Generally the principal is responsible for the implementation of all programs and projects in a school. He has responsibilities for curriculum in addition to his supervisory

and other roles. Emphasizing this instructional responsibility is the fact that the word "principal" is a shortened form of "principal teacher."

Most principals find themselves involved even though their other duties prevent them from having a regular class schedule. A principal has several important roles to play.

Program Implementor

Though the principal may not use this guide in the same way that you, the teacher, will he is still responsible for the funds, time, space, supplies, etc., necessary for a successful program. Somewhere, sometime, the decision to provide all these necessities was made and the principal made it.

Facilitator

Innovative programs often come into conflict with established programs and procedures. In his role as facilitator, the principal works to avoid and to ultimately eliminate this conflict making this new program a successful addition to the curriculum.

Evaluator

As the program for exploring careers in transportation develops and proceeds it will require evaluation by the administrator. Should the program be expanded or curtailed? Are the personnel adequate to the tasks involved? Are the students making reasoned career decisions? Is the rest of the school staff evaluating the program from their point of view?

THE COUNSELOR

The counselor is in a unique position to aid both students and the teacher in exploring transportation careers because he has responsibility for a good deal of career information. In many schools there is the possibility that the entire responsibility for career exploration may fall upon the counselor, in which case he may need to assume the roles of the career exploration teacher as well as those of the counselor. There are four main areas where the counselor can be of special help.

Career Counselor

The matching of an individual's interests, abilities, aptitudes and attitudes to career possibilities is a primary concern of career exploration. The career counselor should aid the student in analyzing and assessing these qualities and interpreting them in the light of information he has obtained through his exploration.

Jobs Expert For Students

The counselor should be able to aid the student and teacher in locating information about salaries, training requirements, career ladders, etc. for careers in transportation using materials in his files or library. If he doesn't have this information, he should be willing to help you or the student obtain it. The counselor may also have direct community contacts, through professional organizations and the like, that can open doors for you and your students.

Schools Expert For Students

The student in career exploration has important decisions to make regarding possible future education or training. The counselor should have information about entrance requirements, tuition costs, types of programs, etc., available in a large number of schools. This should include training that large corporations might have as part of their internal training programs.

Personal Counselor

Students participating in an innovative program such as this are bound to have personal problems. Counselors can and should assist students and, as they become involved, teachers and parents in resolving misunderstandings that may arise. An important information theory axiom states that all communication is only partially successful — there are always those who do not receive important information or those who misunderstand information that is received. Misunderstandings can lead to problems and the counselor, as a concerned third party, can help to resolve the difficulties. Use his services and encourage your students and their parents to do the same.

THE ACADEMIC TEACHER

One of the basic goals of career education is to restructure our educational system by focusing all subject areas around a career development theme. This implies a definite role in career exploration for teachers of the language arts, sciences, mathematics and social studies. To assume a role in career exploration the academic teacher must abandon teaching only in the abstract and move toward an emphasis on practical application. This will enable the student to find meaning and relevance in not only career exploration but in all of his other school work as well.

You, as the career exploration teacher, should assist the academic teacher in assuming this role by encouraging such things as mutual cooperation, observations, joint assignments, providing practical examples, etc. For instance: A written report could be both a career exploration and an English assignment with both teachers assisting the student; an investigation into the environmental aspects of transportation could be done in conjunction with a science project in biology or other science courses; the speech teacher may assist with oral reports on field observations to pass information to interested students not making the trip; and many practical examples from transportation can be provided for mathematics classes. (A mathematics teacher once used the top of a junked service station gasoline pump as a computer in the classroom.)

THE VOCATIONAL AND PRACTICAL ARTS TEACHER

Much of the activity that goes on in the field of transportation can be simulated in vocational, industrial arts, home economics, business and agriculture shops. Many of the career exploration activities can be performed here in cooperation with these teachers. Vocational shops are intended to simulate industry as much as possible and are fertile grounds for both observation of operations and hands-on experiences.

As with the academic teacher, you should make cooperation and assistance your by-words with these teachers. You should make cooperative arrangements with them so that your career exploration students may "slot" in and out of their classes and shops as facilities and schedules permit. These teachers can also be helpful in talking to your students about their own work experience in business and industry.

THE LIBRARIAN

The librarian can be especially helpful to you and your students in career exploration. In most schools what used to be called the library has become the learning resources center. This suggests more than just books and magazines; it includes records, tapes, films, filmstrips, etc. The librarian can also order materials for you if asked, can set up special displays, and can set aside and reserve materials for your students.

OTHER SCHOOL STAFF

In addition to the persons mentioned specifically there are others in the school who are important to your program. These are such people as the secretary, registrar, custodian, assistant principals, bus drivers, etc. Although they may not be charged with any specific responsibilities with regard to your career exploration program they are required to support all school programs. As good team members, they should be willing to cooperate with you whenever possible.

INDUSTRY PEOPLE

Many corporations and organizations should have contributed major efforts to the setting up of your program, both materially an as advisors. They will continue to do so as long as they see a successful program. They play especially vital roles, since their help and information comes directly from industry itself. While all aspects of business and industry, including labor-management relations or union negotiations, should be explored, highly controversial or emotional issues might be best left alone, if only to prevent the student's attention being sidetracked from the matter of career exploration. Some important business and industry people and what they can contribute to your program are listed below. You should consider appointing at least one of each to your advisory committee.

Corporation Executive

This man can best be used to obtain general information. He knows the overall operation of the industry, its problems, its

future and its relationships to other industries. He also has the authority to provide you with access to certain requested areas in his organization and to see that you receive the best treatment.

Personnel Director

This person and his staff can tell you how many workers are employed in different jobs, what their salaries are, and the skills, aptitudes, and attitudes necessary for employment and promotion. The personnel director can also make predictions of job openings for the future; he can recommend the best preparation for employment in his company (although information on the industry as a whole may require supplementing such data from other sources.) His office should also be able to provide you with sample job applications and interview forms for use in your program.

Public Relations Specialist

This is normally the person assigned to handle questions of a general nature from the public and is usually the one you will meet and work with, at least on your first visit to a company.

Union Representative

Contact with union people should give the student a different viewpoint from that of industry management. You should use not only the representative who is an employee of the union but the steward who is also a worker. This is usually beneficial to the student, in that it will give the student a broader view of labor-management relations than might otherwise be the case.

Foremen and Workers

These are often the most difficult people to see and talk with because their primary responsibility is transportation and getting the job done, not instruction. However, they have the most direct, specific, and current job knowledge. They are at the action level of industry where people get their fingernails dirty. Very often they will have more influence on a youngster's career choices than glossy brochures or a tour of the president's paneled offices. When a student talks to a truck driver, ticket agent, mechanic, stewardess, or other worker, he is talking to someone doing the same thing he may be doing within the next five years. From the student's viewpoint, these contacts may be among the most valuable of all.

IV

THE PROGRAM PLAN

One suggested plan for a transportation career exploration program is provided below. It is intended as an aid to teachers in developing their own plan in light of their ingenuity and the resources and constraints of their school and community. It must be emphasized that this is only one approach of many that a teacher might take.

In planning and implementing this exploration program you are setting up an individualized instructional system. A well-designed instructional system involves the teacher as manager of the system rather than the teacher of it. An instructional system is meant to be something like a well-designed and well-running clock; it works with periodic attention and maintenance.

A systems approach to education, as opposed to a teacher-taught classroom, is the difference between a sailboat and a rowboat. One will glide smoothly along with a light hand on the rope and tiller; the other requires putting your back into it all the time, or the darn thing stops.

Do not get the impression that the exploration program will be "easy." The chances are you will work as hard or harder than with other approaches. The difference is that you will stay out of the way of the student and his exploration of transportation careers.

Here is a definitive explanation of what an individualized instructional system is. In connection with this, remember that this is what you are working toward — not necessarily what you will start with immediately. Students need time to adjust to different methods also.

Among other things, an instructional system is individualized when:

1. The characteristics of each student play a major role in the selection of objectives, sequence of study, choice of materials, and procedures followed.

2. The time spent by each student on a given objective or activity is determined by his performance, rather than by the clock.

3. The progress of each student is measured by comparing his performance with his specific objecives rather than with the performance of other students.

The preceding description — issued by the National Laboratory for the Advancement of Education, Washington, D. C. — is a short summary of the principles involved. (More complete materials along this line may be obtained from the N.L.A.E.). This system can be said to be functioning when the following behaviors are observed:

1. Students:
   a. have available, in writing, the objectives toward which they are working.

   b. work toward a variety of objectives.

   c. use a variety of materials and procedures.

   d. move freely around the classrooms, libraries, community, etc.

   e. talk freely to each other about their work.

   f. work on objectives individually, with small groups of classmates, with community persons, visiting experts, or their teachers.

2. Teachers:
   a. encourage students to have a variety of objectives.

   b. allow students to move from place to place (in school and community), based on what it takes to achieve objectives.

   c. spend more time answering questions of individuals and small groups than lecturing to the entire class.

d. encourage students to help determine the materials they work with and the procedures they follow.

e. review student and program success in order to continuously improve the program.

3. Administrators:
   a. select faculty members on the basis of their ability to manage instructional systems and work with students rather than their ability to lecture or maintain discipline. Faculty members are evaluated on the same basis.

   b. provide support services to facilitate such a system including: equipment, supplies, facilities, scheduling procedures, additional training as needed, and so on.

Again it is important to repeat that this kind of individualized instructional system is what you will be working toward, rather than that with which you will start.

The time required for the completion of the transportation career exploration program will vary from one student to another — depending upon such factors as his interest, how many jobs and job families are studied, how many occupational groups are explored and the degree of depth involved with all or any of these.

GETTING STARTED

In many respects, the career exploration phase of Career Education is the most crucial part of all. It is the crossroads point where decisions must be made. If the student has received less than he should have in programs centering about career awareness and career orientation, your responsibilities will involve helping him to make this up. At the same time, you must be certain that students have fully satisfied the objectives of career exploration so that they can make sound decisions for the future. You should review the objectives and activities of the earlier phases of the program to ascertain just how far your students have come.

Your first problem will be to identify where your students are with respect to transportation careers. There are roughly four categories:

1. They have been exposed to Career Awareness and Career Orientation and are ready to begin Career Exploration.

2. They have been exposed to Career Awareness and Career Orientation and have started some Career Exploration on their own.

3. They have been exposed to Career Awareness and Career Orientation but are inadequately prepared for Career Exploration.

4. They have never had any exposure to transportation careers at all in any phase at any level.

It will come as no surprise to the professional teacher that a large number of students will be in Category 3 (inadequately prepared) or Category 4 (unprepared). In this case, there is considerable justification for this state of affairs. Career education is something new — and in the school year you are starting it is very likely that other schools in your district are starting at their levels. It may console you to know that we are all in this together.

As a result of the Career Awareness and Career Orientation programs, you can expect the student who has completed them to have:

1. Developed a positive attitude about the personal and social significance of the transportation industry.

2. Developed a considerable degree of self-awareness and the ability to demonstrate an understanding of the attitudes, skills, interests, and talents necessary to relate self-concepts to jobs in the transportation industry.

3. Developed an expanded occupational awareness by participation in a variety of concrete career development activities so that he understands the inter-dependency of occupations and the need to relate to and cooperate with others in the world-of-work.

4. Improved his own overall performance by participation in a unified, action-centered, career-related curriculum.

The student who has met the objectives outlined above will be ready for your career exploration program; the student who has not done so may be expected to need additional help, time, and

activities. Ideally, you will have an instrument or technique to determine where the student stands in the program. This can be by personal interview, a multiple choice questionnaire, and/or an open-ended survey.

One way to obtain this information would be to give the incoming students an assignment to answer such questions as these:

1. Why is the transportation industry important to all of us?

2. Why is the transportation industry important to you?

3. What kind of job in transportation are you considering at this time?

4. If you obtain such a job, what kind of fellow workers will be associated with you? Who will give you directions? Will you give directions to others? What will your job contribute to the transportation industry? How will it help the country as a whole?

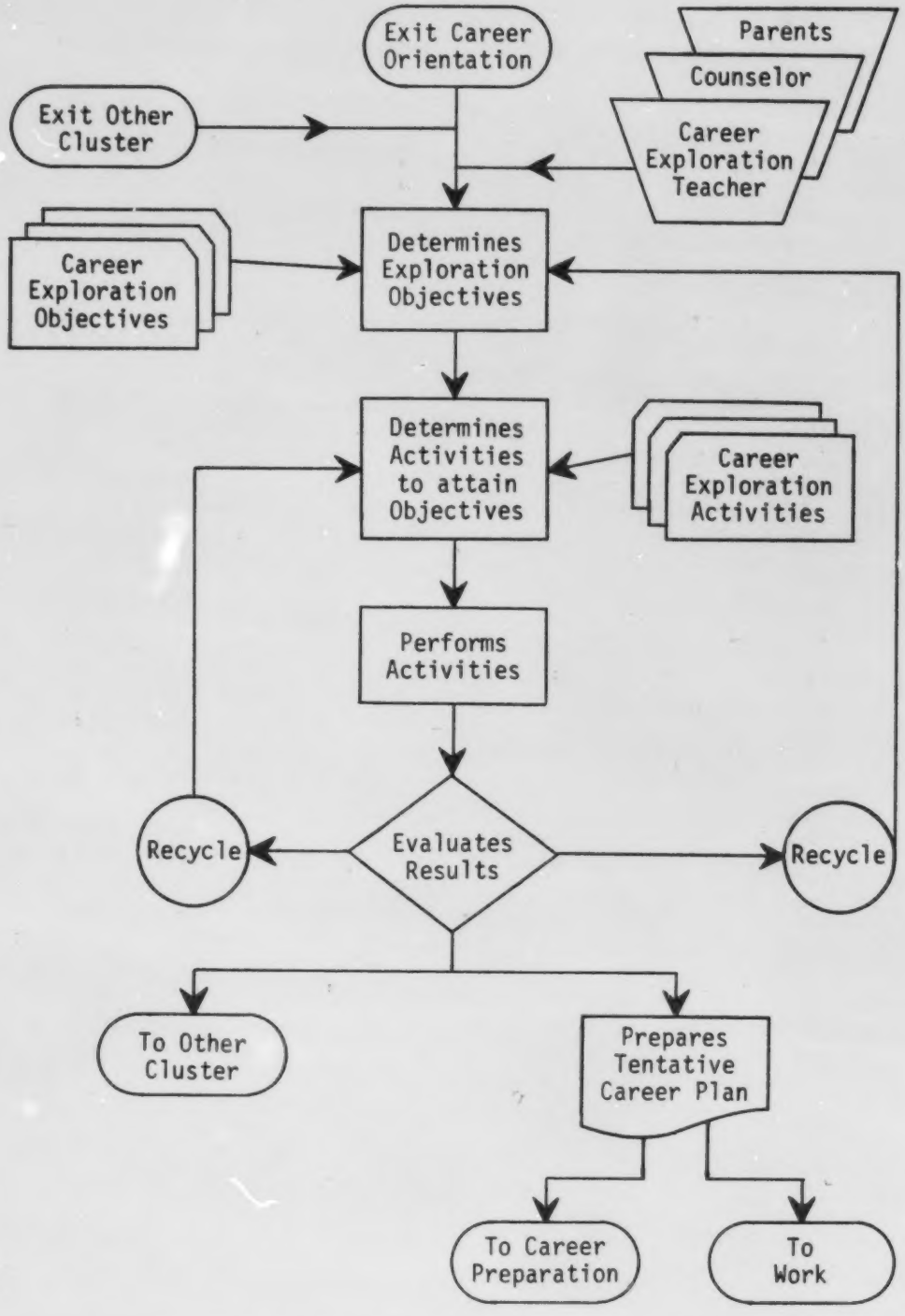
5. Has your study of the transportation industry helped you in any school subjects? If so, which ones and how? If it hasn't, how do you think that it could?

The results of your survey questions should determine how your students face career exploration.

USING THE PROGRAM PLAN

This guide to the exploration of transportation careers represents the first half of a two part program of Intermodal Transportation Career Education for the high school. A flow chart of the entire program appears on the following page for reference.

The student should embark upon the exploration of transportation careers with advice from the career counselor and assistance from you, the teacher. The program plan will guide you in assisting the student to select appropriate exploration objectives. The next step will involve you in aiding the student's choice of activities to perform in an effort to meet the selected objectives.



Transportation Career Exploration Flow Chart

Your guidance and coordination talents will be put to the test as the student proceeds through performance of the activities in his exploration plan. The final stage of the exploration program is the evaluation of the results. Evaluation is crucial and you and the student will probably want to evaluate continuously throughout the program as well as at the end. Decisions made at the end of the program are most important to the student and the assistance of a career counselor is vital. Evaluation will result in one or more of three alternatives, the first two of which will occur during continuous evaluation and the third at final evaluation.

First, a lack of success may be traced to poor or inappropriate selection of objectives. There may be many and varied reasons for this but nevertheless the situation must be remedied. Help the student correct the problem and note, for future reference, any causes you discover. Remember that you and the student are not necessarily tied to the eleven specific objectives of the program. You may find a need to assist a student in revising some of these or designing some completely new ones. This can be done either at the time of making the original exploration plan or during evaluation, or both.

Secondly, the student may, for one reason or another, be unable to perform some of his chosen activities. You will no doubt run into difficulties in scheduling, both in school and in the community. As exploration proceeds it may also become evident that some activities are inappropriate for a particular student. Again, remember, you may have to revise or redesign some of the listed activities and/or devise new ones. Feel free to do so.

The third alternative result of evaluation is the student making a well-reasoned and intelligent choice of a career preparation program that is appropriate for him. The student's choice of a career preparation program outside the field of transportation does not indicate an unsuccessful exploration of transportation careers. The goals of career choice lie in its process, not in its end results. It is not WHAT the individual chooses that concerns us. Rather, it is THAT HE CHOOSES which is important. The choice is the measure of success, not the field of choice. Remember, you are not recruiting for the transportation industry.

THE PROGRAM

This exploration program is presented with the objectives and teacher tasks ordered in a way that seems logical to the authors. Do not feel tied to the performance of these tasks in this order. You will probably need to revise and alter the order to match your schedule both within the school and the community.

The tasks are numbered and are supported with narrative explanations in most cases. The objectives appear in boxes to set them apart. Review the continuity and then plan your program accordingly.

1. Administer pre-test to determine what students already know about transportation; go over all objectives with students and explain and clarify them; have students review possible activities to attain these objectives; encourage the students to begin making decisions as to which objectives will be most appropriate to their needs. (Activities will be selected from lists in the occupational group being explored and matched with the objectives of this plan. This will constitute the student's "Plan of Exploration").

One of the most challenging aspects of systems approach to education is the selection of appropriate activities and experiences. It is no easy task for an instructor to design or supervise the designing of such creative activities. A process that has proven to be of help in this task is the use of a matrix — or cross-tabulation chart — to ensure that the goals desired and the areas of interest to the student are clearly visible as we suggest and refine learning experiences.

The matrix on the following page was constructed utilizing the objectives of the suggested program plan and the three levels of student interaction with instructional material used throughout the Activities and Experiences Manual.

The chart allows you, the teacher, and the students to ask such questions as: "What vicarious activity would give us insight into the communication skills needed in the world of work?"; "How can we build models to demonstrate the required job operations?"; "What specific equipment should we request to get our hands on during the field trip?"

The use of "brainstorming" structured by charts such as this one is especially fruitful. The fact that during brainstorming

CAREER EXPLORATION
ACTIVITIES AND EXPERIENCES PLANNING CHART

OBJECTIVES	Levels of Student Interaction		
	Vicarious	Simulation	Experiential
1. Communication skills required in the world of work			
2. How transportation contributes to society			
3. Changing employment			
4. Job Operations			
5. Employment outlook within specific occupations			
6. Skills required			
7. Job descriptions			
8. Career lattices			
9. Life styles			
10. Entry level requirements			
11. Career plan			

sessions everyone is allowed to build on anyone else's suggestions — but no one is allowed to criticize or delimit another's contribution — generally produces a wealth of suggestions that can then be analyzed and refined.

The chart functions to keep the speculation within bounds and offers criteria for the final selection of those suggestions to be carried out.

Of course, it is quite possible that many suggestions will come to mind in some categories and none in others — and some categories might well seem meaningless or unimportant. The important thing is that you or your group have a yardstick to help you to think about and answer such questions intelligently.

The matrix is quite flexible, allowing for innumerable combinations of factors to be considered. For example:

O B J E C T I V E	Transportation Form			
	Land	Sea	Air	Pipeline
2. How transportation contributes to society				

More complex forms are easily constructed and allow for increasing specificity of activity needs. For example:

O B J E C T I V E	Levels of Skilled Performance							
	Manipulation		Recall		Discrimination		Problem	
	Levels of Student Interaction							
	V	S	E	V	S	E	V	S	E	V	S	E
4. Job Operations												

Use this chart as it is, or use it as an example to construct a better one that will better meet your requirements.

2. Review pre-test with students and discuss the results generally; be honest in a positive way and tell them how much a sincere effort on their parts will help them. Review with the students the activities that they have decided upon to attain the objectives. Since many of these activities will involve going outside the school or classroom they will need preparation for undertaking them. Have the students begin writing necessary letters and attempting to set up appointments and dates.

3. Provide activities for those students who are behind as far as Phases I and II are concerned. From the lists of materials and activities you should be able to make constructive efforts in this direction; assign several students the weekly chore of cutting out newspaper articles on transportation, giving magazine references, and so on. Often students can read over the television preview notices (TV Guide, Sunday newspaper TV section, etc.) and post a list of programs related to the transportation industry. You will be surprised to see how much you can find. A recent TV

film called The Bird Man showed prisoners escaping from a Nazi concentration camp by means of a prisoner-built glider: the techniques and engineering involved would interest and amuse anyone involved in aerospace. (Yes, they did escape, but it was very, very close.) You may want to assign the Introduction to Transportation (Chapter 2 in the technical paper) as a reading and conduct a discussion or question and answer session.

4. By this time there should be responses to student requests and you can begin filling in the large calendar of student visits, appointments, etc. The rest of this schedule is given in the approximate order of how the exploration can be undertaken, but, as you will see, the order can be varied according to student needs and scheduling problems:

> Objective One: Communications skills required in the world of work. The student will demonstrate a knowledge of communications skills required in the world of work; communications skills will include oral and written skills as applied to the transportation industry.

One of the factors behind this objective is to demonstrate to the student that basic communications skills (reading and writing) are an essential part of the job. The best and most direct way for the student to appreciate this is for him to observe a worker actually performing these skills as well as discussing them with this person. In trucking, for example, there are bills of lading, accounting, record keeping, expense accounts, telephone calls, notes, trip records, etc.

5. Discuss student findings on communication skills used in the world of work (Objective One).

> Objective Two: How transportation contributes to society. The student will demonstrate an understanding of the ways in which transportation participates in the production of goods and services for society. He should describe the contributions to the social system of the services performed in the occupational group and job families being explored.

There are four modes of transportation (land, sea, aerospace, and pipeline); applicable to this are the twelve separate occupational groups as explained in detail in your transportation careers materials.

6. Under each occupational group are listed the job families relating to it. For example, the occupational group called distribution services,has these job families under it: customer service, expediting traffic and rates, shipping/receiving and warehousing.

With regard to this objective, the student should select one occupational group and job family and try to learn how it contributes to society. A start is provided within each occupational group in the section "Society and This Occupational Group." (Chapter 4 in the technical paper). This may not be a simple activity; after students have selected occupational groups and job families, a consultation with the librarian is in order to see if library materials can provide the necessary information; another possibility is for students to write to large corporations requesting specific information about the contributions involved with stated jobs; the large corporations, with public relations staffs, are the most likely to be able to supply this information easily. If you are not sure where to write, consult your city library for a national directory of manufacturers and corporations; another useful source is the telephone company office where directories from all over the U.S.A. are available.

To a limited extent, the student might also observe persons working in the job family and draw conclusions as to how this contributes to society, but the student may need assistance to draw these conclusions. (For example, when National Airlines stewardess Molly says, "Fly Me!", is it obvious how this contributes to society?)

Another useful technique will be to obtain any films, slide-tapes, and/or cassette recordings available of interviews which emphasize how each job family contributes to society.

7. Discuss how transportation contributes to society (Objective Two) with the class using materials in the Introduction to Transportation and Occupational Group Chapters.

The attainment of the next few objectives will be greatly aided by the forms suggested on the following pages. Again, use them as they are or alter them to suit your requirements.

JOB INFORMATION SHEET

I. Nature of Work:

A.

B.

C.

II. Where Employed:

A. How many?

B. Where?

III. Training, Qualifications, Advancement:

A.

B.

C.

D.

IV. Employment Outlook:

A.

B.

C.

V. Earnings and Working Conditions:

A.

B.

C.

D.

I INVESTIGATE AN OCCUPATION

1. Name of occupation _____
2. Job Title _____
3. Exactly what does the worker do? _____

   _____
4. What tools or equipment does he use? _____

   _____
5. What are the educational requirements for this job? _____

   High school education? _____ College? _____

   Technical School? _____ Other? _____

   Further information _____
6. What qualifications, other than education, are necessary?

   Physical, Mental, etc. _____
7. What are the working conditions and hours? _____
8. In what area of transportation is this job found? _____
9. In what geographic location is this job found? _____
10. What are the opportunities for advancement? _____
11. List as many related jobs as you can _____
12. What interests of yours would this satisfy? _____
13. To what abilities of yours is this job related? _____
14. Will this job require more or less employees in the future?

    _____

Objective Three: Changing employment opportunities. The student will demonstrate knowledge of changing employment patterns and opportunities in the transportation field with respect to future possibilities for success.

Your school counselor can be the prime source of information on employment opportunities as well as your classroom copies of *The Occupational Outlook Handbook* and *The Occupational Outlook Quarterly*. Another good source is the personnel office of any local corporations. Of course, there is always the danger of not getting a clear picture because of special local conditions, and this should be kept in mind.

In this objective we are attempting to measure the future; a risky business at best. The student's best course is probably to gather as much different over-all data as possible (articles in *Fortune, Business Week,* etc., are worth a search) and try to draw his own conclusions.

8. Discuss future opportunities in transportation (Objective Three) with the class; emphasize the importance of making such studies; and give consideration to the factors that can interfere with their accuracy (such as changing economic conditions, new technological breakthroughs, and so on.)

Objective Four. Job Operations. The student will develop an understanding of the major operations performed by workers engaged in the occupational group and job family being explored.

One preliminary source of this information is the *Occupational Outlook Handbook,* from the U. S. Department of Labor, Bureau of Labor Statistics. One section of over 100 pages is devoted to transportation and related fields.

For example, an ordinary seaman will "perform general deck maintenance work such as scrubbing decks, coiling and splicing ropes, chipping rust, and painting. Ordinary seamen also may 'spell' (relieve) the helmsman and lookout."

This will be an excellent beginning toward attaining this objective, but wherever possible the student should have an opportunity to observe these operations in action; even attempt a few himself.

In *Developing Vocational Instruction*, Mager and Beach suggest a format for describing job operations in three columns, similar to this:

No.	Ordinary Seaman Tasks	Frequency of Performance	Importance	Learning Difficulty
1.	scrubs decks	often	some	easy
2.	coils ropes	often	some	moderate
3.	splices ropes	occasionally	great	difficult
4.	chips rust	occasionally	great	moderate
5.	painting	occasionally	great	difficult
6.	helmsman	regularly	very great	difficult
7.	lookout	regularly	very great	fairly easy

If you ask the student to use this format it may impel him toward examining job operations more closely and encourage him to ask questions and think about answers. The perceptive student will also notice that when he asks these questions of different persons, he gets different answers. Supervisors and foremen, for example, often stress what the worker ought to be doing, the worker tells what he is doing. (Of course, in the more effective job situations supervisors and worker are in close agreement.)

9. Allow the students to discuss the various job operations (Objective Four) that they have investigated. Ask them to be especially aware of the use of communication skills on the job. In the example given of the ordinary seaman there appears to be very little of this actually stated. In a closer analysis, it will become clear that in his duties as lookout he would

be expected to identify coded channel markers (numbers and colors in the daytime; flashing colored lights at night), semaphore and Morse codes for signaling ship-to-ship or ship-to-shore, as well as some flag code. As helmsman he would have to be able to read and set compass headings, communicate with the engine room, and keep a record of distance and speed.

Objective Five: Employment Outlook. The student will survey, on both the local and national levels, the employment outlook in transportation for the unskilled, semi-skilled, and skilled worker within an occupational group.

The intent of this objective is to encourage the student to do some thinking. With a lack of any advanced job skills the student is at the unskilled level. Are the opportunities at that level worthwhile? Reaching the semi-skilled and skilled levels will take additional time, education and money: are they worth it?

The career counselor can be especially useful in assisting the student to survey the employment outlook involving different degrees of job skills. The previously mentioned *Occupational Outlook Handbook* is a useful source also. Many states publish job outlook information. The State Department of Labor usually issues this; its headquarters will be in the state capitol, although there may also be an office in your locality.

When any student visits the personnel office of a corporation, he might wish to ask questions such as these:

> What percent of your entire work force consists of unskilled workers? Semi-skilled? Skilled?
>
> What are salary ranges (lowest to highest) for unskilled workers? Semi-skilled? Skilled?
>
> In which of these categories are you employing the most workers? Do you think this will change in the next five years? In the next ten years?
>
> Are unskilled and semi-skilled workers given any opportunities for improvement through on-the-job training, special courses, or part-payment of tuition?

If your son or daughter wanted to make a career in this occupational group and wanted to advance as far as he (or she) could, in what category should they first apply for employment?

The answers to question five may sometimes surprise you. One airline personnel manager said that his son should finish high school and then immediately apply for a job on the flight line, starting at an unskilled level. His reasoning was this: four out of five promotions in that airline are from within the ranks of its employees and it is much easier to get a job at the lower levels than at the higher levels. Moreover, the company has a paid tuition program that would allow the young man to complete a college program while making a good income. By the time he finished a college program he would have had four to six years of experience with the airline and be able to move directly to an executive position, putting himself far ahead of any competition. This advice may not apply to every airline, but asking this kind of question almost always brings out interesting responses.

In reviewing Objective Five (Employment Outlook), the students should feel free to discuss the pros and cons of opportunities for unskilled, semi-skilled and skilled workers within occupation groups/job families.

Encourage the students to discuss the idea that the level of skills a student decides to bring to a job is an individual decision with no wrong answers. The student with family financial support can afford to spend years in school to develop a high degree of skills, but in so doing he may sacrifice his independence. The youngster who elects to go into a semi-skilled or unskilled position is immediately self-sufficient and independent, but he may be sacrificing his future development unless he secures additional training.

10. YOU ARE NOW HALFWAY THROUGH THE TRANSPORTATION CAREER EXPLORATION PROGRAM. Since you can still make corrections, now is the time to take careful stock of what you have done so far. If you are ahead of schedule or on time, rejoice. (But don't rest on your laurels — sometimes that last minute slump moves in and takes its toll.)

    If you are behind you have real problems. Let's consider real solutions. There are basically three solutions to your problem: (1) Increase

the pace; (2) Use easier activities, such as can be done in the classroom, library, or counselor's office; (3) Eliminate some of the objectives. Which of these techniques you will employ will depend on your judgment as the classroom manager.

If possible, you might try all three techniques with different students. Encourage the able, fast-moving students to increase their pace; others can be told to select easier activities; still others can be told to drop selected objectives.

Objectives to be eliminated from exploration should be a matter of individual decision, yours and the student's.

Objective Six. Skills Required. The student will classify the various degrees of skill required for unskilled, semi-skilled, and skilled jobs in the occupational group being explored.

This objective is related to Objective Four (Job Operations) in which the student reviewed what the major tasks or operations were in the occupational group/job family being explored. Some of those data can be used with that and, in fact, the student may be able to work on both together. Here the objective is to classify the degree of skill involved.

What is meant by degree of skill? Obviously, degrees of skill are on a continuum. A man painting a fence in his backyard has something in common with Norman Rockwell painting a picture (both use brushes and paints), but the degree of skill is quite different.

Dr. Robert Gagne lists eight different kinds of performance which can be placed along a continuum from unskilled to highly skilled. For this activity we have reduced the eight to four:

> Manipulation. This involves performing a physical act, fairly simple in procedure, which constitutes the main part of the job It involves little memory and little skill and is usually done on command.

Recall. This involves a memorizing of procedures or actions done in response to needs rather than orders. Scrubbing decks, for example, is mostly manipulation; splicing rope involves a memory of procedures and techniques.

Discrimination. This involves observing the difference between two or more things accurately. The ordinary seaman in his function as helmsman will notice the compass reading changing with each motion of the ship. At what point does he make a change in the wheel's position? Thus, it becomes a matter of discrimination.

Problem-Solving. This represents the highest skill level of all. Referring to our seaman, the highest skill he used was probably in the area of discrimination, but the ship's officer who decided the route (in terms of most direct route, least obstructions, best weather conditions, etc.) was engaging in problem-solving.

The more actions that involve discrimination and problem-solving, the higher the degree of skill required; if there is more manipulation and recall, the less skilled.

The students might take the series of job operations (such as that of our friend the seaman) and classify them like this:

Task	Frequency	Importance	Skill Level
scrubs decks	often	some	manipulation
coils ropes	often	some	recall/manipulation
splices ropes	occasionally	great	recall/manipulation

11. In reviewing the activities of Objective Six, ask the students to investigate if there is any connection between the degrees of skill required for a job (as determined by using a scheme derived from Gagne) and the salary paid. If there is a large difference between the skills required, and the salaries paid, ask the students to investigate what factors could explain this.

> Objective Seven. Job Descriptions. The student will demonstrate a knowledge of each job/job family he has chosen to explore by writing a description of each and listing the kinds of work (and workers) in each job family.

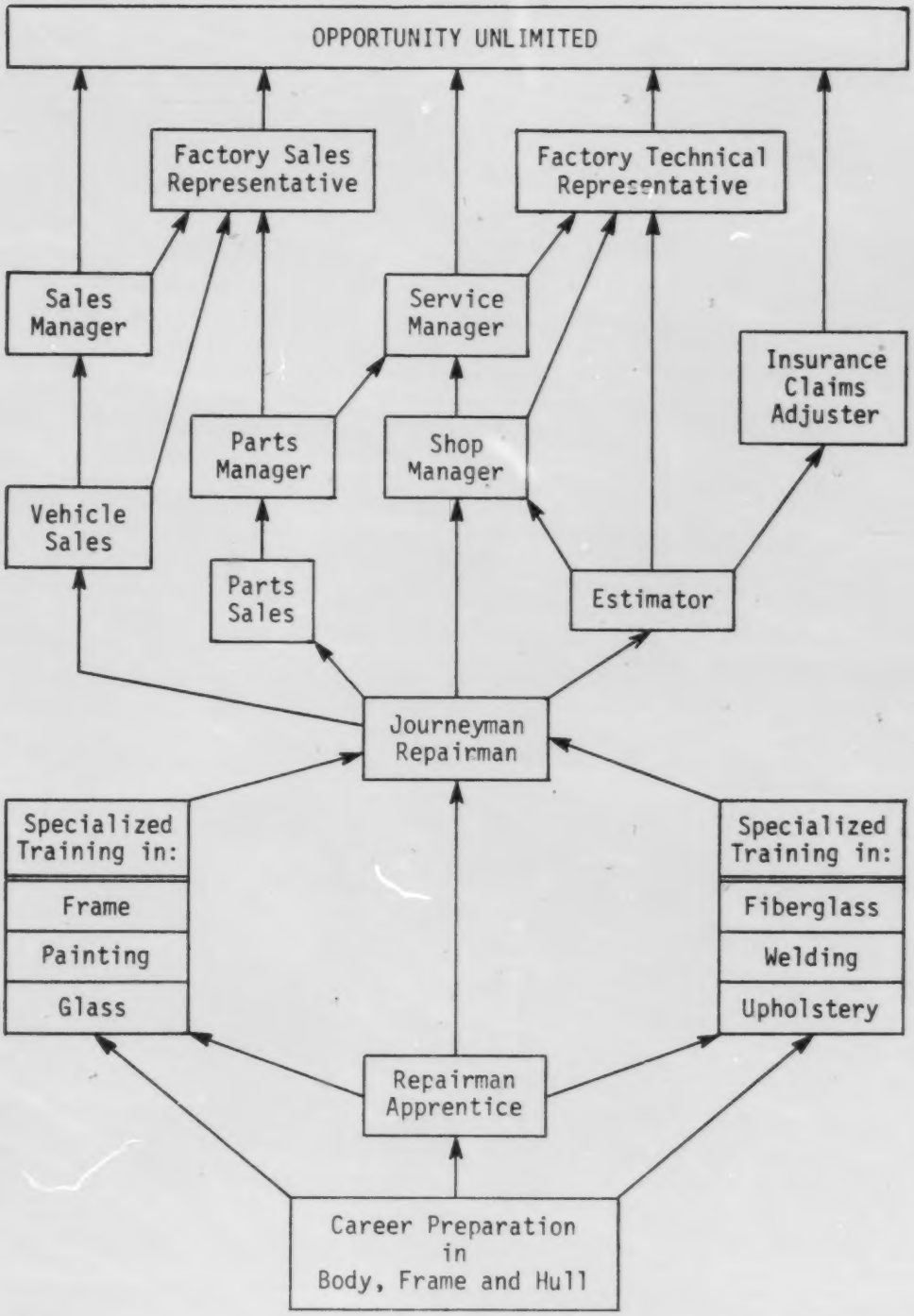
The Occupational Outlook Handbook and the *Dictionary of Occupational Titles* are good first resources to accomplish this goal; another possibility is to write local corporations for information; or to visit a local personnel office.

One effective method of presentation of this information would be in the form of a poster with squares and information, similar to an organization chart. This would then prepare the student for the next objective involving career lattices.

In reviewing Objective Seven with the students, ask them which workers in a job family could easily switch to a job in another job family. The answer will depend on the job, some being more "interchangeable" than others. Do the interchangeable jobs pay more or less than the others?

> Objective Eight. Career Lattices. The student will draw and label a lattice for an occupation including both entry-level jobs and the highest positions.

The purpose of this objective is to impress the students with the fact that it is not always desirable to train himself for only one job. Knowledge of a career lattice allows the worker to see beyond the job he is currently performing so that he can make the most of his opportunities to advance.



Career Lattice Model

The preceeding page is one version of a career lattice. Be aware that different students will construct different lattices for the same job depending upon their attitudes and interests. For example, the lattice illustrated does not take into account the possibility that a person with the same training may go into the original manufacture of transportation vehicles.

Although the student might be able to construct a career lattice from references and other materials available, it will be far more meaningful if the student can get some professional assistance with this. For those jobs involving union membership, the student can check with the local union headquarters. For a broader cross-section, he would check with personnel people in several corporations.

13. In reviewing Objective Eight (Career Lattices), ascertain if the students can answer these questions:

    Which entry-level jobs lead to the highest positions?

    Which entry-level jobs offer the least opportunity for advancement? Note that these jobs may have other advantages, such as high salary.

Objective Nine. Life Styles. The student will list examples of the life styles of persons employed in the occupational group/job family being explored and contrast it with his own.

In this objective the student considers the kinds of persons who tend to be employed in a certain job family and then attempts to determine how he "matches up." For example, you would expect that persons employed in passenger services (customer relations, enroute services, food services, etc.) would be at ease and pleasant while working with strangers. The ordinary seaman, on the other hand, stands his lookout position, splices his ropes, and chips his rust, alone most of the time.

How do you identify a person's lifestyle? One way would be a series of questions to be asked of persons engaged in that job family; the student can then compare these with certain answers he would have offered on his own.

Suggested survey questions:

Why are you in this line of work?

Do you prefer to work indoors or outdoors?

Do you work better in hot weather or cold weather?

Do you prefer to work alone, with a small group of people you know, or do you like meeting strangers?

What is the best part of the job as far as you're are concerned? Is it salary? Hours? Security? Opportunity for advancement? Chance to meet people? Challenge?

Do you prefer a job with regular hours each working day? Or do you prefer different hours on different days?

Do you like things explained to you in detail? Or do you prefer to figure them out yourself?

What kind of person would you like to work with you on the job?

Add other questions that you think might be important or useful. These could refer to family life, social status, future plans, and so on.

An additional activity will include attending a meeting or conference of members of a particular job family and observing their behavior: cheerful, extroverted, attentive, agreeable, etc. Along the same lines, a cassette tape of job family persons discussing issues or answers to survey questions (such as the above) would be useful.

14. In reviewing job family life styles (Objective Nine), ask the students to consider these questions:

Is there a certain kind of person who works in that job family? What is he or she like?

Are you similar to these persons? Do you tend to like what they represent?

Remind the student that when he looks at workers in a certain job family he is looking at what he himself may become in five, ten, or fifteen years.

> Objective Ten. Entry-Level Requirements. The student will list educational/training requirements for at least three of the entry-level jobs/job families he has chosen to explore.

This objective is meant to be of practical value for the student who needs (or desires) to enter the world of work as soon as possible. The *Occupational Outlook Handbook* can be helpful; see also local or regional information issued by state agencies. The counselor can help these students, too, by clarifying and synthesizing available information.

When the student prepares his list of educational requirements for these jobs, he should include:

How long the training takes;

How much it costs;

How much he can earn going into each entry-level job;

What opportunities for additional training the job will provide.

15. In reviewing Objective Ten, your goal should be that you want your student to have the best possible opportunity for future happiness and success. As such you might want to ask him why these particular entry-level jobs were chosen for study. Do not give your student the impression that going into a job now (instead of after two, four or six years from now) is not a reasonable choice. For certain individuals, it might be the most reasonable decision.

Objective Eleven. Career Plan. Based on his activities in Career Exploration, the student will prepare his long-term career plans, to include the training he intends to take, the entry-level position he is working toward, and at least three steps of the career ladder he intends to follow; he should include an estimate of the time and costs involved; finally, a personal statement of why he is choosing this career plan. Here is an excellent opportunity for a counselor to assist the student in the development of such a plan.

The earlier pages of this Teacher's Guide stressed that the major goal of career exploration was to help the student make decisions about his future. That time has now arrived and Objective Eleven, the Career Plan, is its fruition. All the objectives and activities have been designed to work toward this product.

Encourage the student to organize all the materials he has prepared into a neat folder or binder with a table of contents, numbered pages, illustrations, brochures, and copies of letters he has written or received. The idea is not to have the student make a fussy or frilly scrapbook for extra credit but to insure that he has something of which to be proud, justifiably proud. This will be something he can show you, his counselor, his parents, and even potential employers.

Review the student notebooks on an individual basis. Be positive and encouraging. Those students whose efforts are especially noteworthy can be encouraged to visit industry personnel and discuss future plans. Encourage the parents to review the student's work also.

16. CONGRATULATIONS. You have reached the end of the objectives, but not necessarily the end of the program. In the remaining time you will need to:

    Help slower moving students to catch up.

    Complete your review of student notebooks.

    Write letters of thanks to all those persons who have helped you in any way.

You will want to write letters to librarians, counselors, secretaries, assistant principals, parents, personnel managers, public relations experts, supervisors, workers, and others. Have this done by those students who have completed their objectives.

When you have these letters written, consider something really great about most people; most of us feel proud of ourselves when we have helped young people. Don't be surprised if the persons to whom you send thanks save their letters, frame them, and post them on bulletin boards — so never send a dittoed or mimeographed letter. Many stationery stores carry blank certificates on parchment-type paper; can you talk the art teacher into having them hand-lettered? How about a certificate for each of your students, too?

While the program is winding up is an excellent time for you to review and evaluate your efforts. Start by examining this Teacher's Guide. Which ideas helped? What improvements can you make? Which of your colleagues and contact persons helped the most? Who let you down? How can you give them another chance to help. How was your success with the students? Did you really manage the classroom situation and not just teach it?

Don't rely on your own judgment in this evaluation entirely; you may be too hard on yourself. Ask your students for their opinions and ideas.

For the next time you supervise a career exploration program, make a resolution to avoid making the same mistakes you made last time. Vow that next time you will make new, different and completely unpredictable errors.

V

GENERAL RESOURCES

BOOKS, BOOK LISTS AND PAMPHLETS

This chapter includes an exhaustive listing of resource materials available on transportation. It includes books, articles, films and filmstrips and periodicals. Whenever possible, complete information is provided (including prices, addresses, descriptions of material, etc.). This list of resources will be continually updated by the Transportation Curriculum Project staff. Any errors in information or additional resources discovered by you in your management of this career education program should be noted on the final pages of this chapter and subsequently reported to the project staff. This will facilitate staff work toward making this resource listing as accurate and comprehensive as possible. Your assistance in this task is critical to the effective compilation of concise information.

You will note that many of the resources suggested herein pertain to specific occupations or families of occupations. You should refer to these resources when covering appropriate sections in the document *Intermodal Transportation Career Education: An Occupational Cluster Paradigm*, the source book of occupational information developed by the Transportation Curriculum Project for use with this teachers guide.

Suggestions for this list were obtained from many different sources and resultingly, the amount of information provided about these items has also varied. If an item has seemed especially interesting — or relatively unduplicated by other items — it has been included here, even though information about it might be somewhat incomplete.

Most usually this has occurred with items that were published prior to 1970 or that are now out-of-print. Some of these have been included in this list if sources indicated that they still contain relevant information and are still available in many school and public libraries.

Whatever information might be lacking on certain items, the complete name and address of the publisher is included in each case. This will permit the teacher or student to contact the source of any item not available in local libraries.

In the publishing industry, prices have increased in recent years and, in addition, prices of educational books tend to fluctuate according to who orders them and from what source they are obtained. Unless items are free or unusually expensive, prices are omitted in the following lists due to the great difficulty involved in remaining current as new editions of these works appear. However, this should provide no difficulty in ordering these books, since all of these publishers will extend credit to schools and responsible persons connected with them. The sole exception to this is the U. S. Government Printing Office — but it provides very rapid response when current prices are requested.

1. *Aim for a Job in Automotive Service.* Authors: Dawson Taylor and James Bradley.
   Aim for a Job in Trucking. Authors: John P. McGill and W. L. Robinson. Published by Richards Rosen Press, 29 E. 21st St., New York, N.Y. 10010.

   Both books cover sales, marketing, operations, safety, maintenance, public relations, advertising, accounting and traffic as well as driving.

2. *A List of Books for Possible Use in Teaching or Studying Railroad Transportation in Colleges or Universities.* Prepared and published by: Association of American Railroads, Transportation Building, Washington, D. C. 20006; 1969; Free.

   This pamphlet is intended as a guide to the instructor teaching transportation courses. It represents a compendium of texts and recommended readings for those interested in railroad transportation.

3. *American Association of Junior Colleges Aviation Guidelines.* Author: Harold L. Finch; Published by: American Association of Junior Colleges, One Dupont Circle, Northwest, Washington, D. C. 20036; 64 pages.

A booklet dealing with the establishment of an educational program in any one of the general areas of air transportation, including: Aviation Education — The Big Picture; Getting Started — General Guidelines; and Aviation Programs.

4. *American Trucking Trends.* Prepared and published by: American Trucking Association, Inc., 1616 P Street, N.W., Washington, D. C. 20036; 1971; 36 pages, Free.

   Provides all-round coverage of the trucking industry. Teachers will find in it many facts and figures about trucking occupations, and students themselves will be able to use it as a resource.

5. *America on the Move.* Published by: U. S. Department of Transportation, Washington, D. C. 20590; 1972.

   A collection of stories introducing transportation in America-past, present and future. Bibliography.

6. *Aviation and Transportation Majors and Curricula Offered by Colleges and Universities.* Prepared and published by: Office of General Aviation Affairs, Federal Aviation Agency, U. S. Department of Transportation, Washington, D. C. 20590; 1970.

   This is a listing of colleges and universities, (classified by status) which offer majors and curricula in Aviation and Transportation.

7. *Aviation Education Bibliography.* Produced and published by: National Aerospace Education Council, 616 Shoreham Building, 806 15th Street, N.W., Washington, D. C. 20005; 1967.

   This booklet consists of an annotated series of selected materials relating to education in the field of aviation.

8. *Aviation, Where Career Opportunities Are Bright.* Available from: National Aerospace Education Council, Room 616, Shoreham Building, 806 15th Street, N.W., Washington, D. C. 20005; 1968.

   Available in three forms — as a student handbook, as a counselor's guide, and as a film strip. For each of the following, the kinds of jobs, need for personnel, salaries and working conditions are outlined: Aircraft Manufacturing Occupations; Career Pilots and Flight Engineers; Aviation Mechanics; Airline Careers; Airline Stewardesses or Stewards; Aviation Careers in Government; Airport Careers; and Aviation Education and Other Aviation-Related Careers.

9. *Barge and Towing Industry Catalog of Publications, Films and Information Resources.* Prepared and published by: American Waterways Operations, Inc., Suite 502, 1250 Connecticut Avenue, Washington, D. C. 20036; 1967; Free.

   This list is restricted to water carriers.

10. *Bibliography of Railroad Literature, 8th Edition.* Prepared and published by: Association of American Railroads, Transportation Building, Washington, D. C. 20006; Free.

    This bibliography is intended to list the most outstanding books and stories about railroads. Books are grouped under these headings: Childrens Books; Juvenile Books; General Literature; Model Railroading. Also included are sections on Railroad Statistics and Railroad and Travel Periodicals.

11. *Career Opportunities in Aviation.* National Aerospace Education Council, Shoreham Building, 806 15th Street, N.W., Washington, D. C. 20005; 1967.

    Presents a concise but detailed survey of aviation career opportunities. Particular attention is given to the aviation mechanics field. There is also a complete roster of F.A.A. certificated aviation mechanic schools.

12. *Careers in Aerospace.* Published by: American Institute of Aeronautics and Astronautics, 1290 Avenue of the Americas, New York, N.Y. 10019; 1972.

    Booklet providing information on aerospace careers requiring college education. Lists schools and additional information sources. Bibliography.

13. *Careers in Aviation.* Reprinted from Flying Magazine, August, 1963. Distributed by: National Aerospace Education Council, 616 Shoreham Building, 806 15th Street, N.W., Washington, D. C. 20005.

    This article presents a survey of careers in aviation which is still timely.

14. *Careers in the American Railroad Industry.* Author: Charles O. Margret; Published by: Bellman Publishing Company, P. O. Box 172, Cambridge, Massachusetts; 1960; 32 pages.

    A fairly comprehensive outline of careers in the railroad field, although some of the material is now out-of-date.

15. *Containers: Land, Sea, Air.* Prepared and published by: American Trucking Associations, Inc., 1616 P Street, N.W., Washington, D. C. 20036; Free.

This booklet outlines the implications of containers in cargo transportation.

16. *Dictionary of Occupational Titles, 3rd Edition.* Prepared by: Bureau of Employment Security, U. S. Department of Labor. Distributed by: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; 1965.

A comprehensive guide to all occupations, including those in transportation. Most jobs are defined in broad terms. There is a certain amount of cross-referencing in these two volumes according to job characteristics and other elements.

17. *Directory of Transportation Education in U. S. Colleges and Universities.* Author: Jean M. Walker. Published by: American Trucking Associations, Inc., 1616 P Street, N.W., Washington, D. C. 20036; 24 pages; Free.

This pamphlet is for students interested in careers in transportation requiring education beyond high school and for others interested in taking courses in this field.

18. *Domestic Transportation.* Practice, Theory and Policy. Authors: Roy J. Simpson and Martin T. Farris; Published by: Houghton Mifflin Company, 2 Park Street, Boston, Massachusetts 02107; 1971.

A college textbook which could prove a useful reference for the teacher concerned with this field. The contents cover the following areas: The Role of Domestic Transportation; Economic Characteristics and Performance of Domestic Transportation; Carrier Services in Domestic Transportation; Regulation of Domestic Transportation; Goals in Domestic Transportation Policy; Transportation Aspects of Physical Distribution Management.

19. *Facing Facts About Choosing Your Life's Work.* 1968.
Facing Facts About Preparing for Your Future. 1971.
Facing Facts About the Two-Year College. 1970.
Facing Facts About Your College Career. 1971.
Published by: The Prudential Insurance Company, Box #36, Newark, N.J. 07101; Free.

Personal booklets with paper and pencil self-inventories. Bibliography.

20. *General Motors Dealership Career Day Kit.* Prepared and published by: Career Program Service Section, General Motors Corporation, Room 8-151, General Motors Building, 3044 W. Grand Blvd., Detroit, Michigan 48202; Free.

This Career Kit is of varied contents, including a handbook, pamphlets, and a motion picture. Its purpose is to interest young people in the retail automotive business.

21. *Guidance Publications.* Published by: Guidance Center, University of Toronto, 371 Bloor Street, W., Toronto 5, Ontario, Canada.

These brief monographs deal with individual occupations. Some relate to transportation, (Example: Bus Driver). Each monograph describes the job involved, personal and educational requirements, entrance and advancement, earnings, working conditions, and advantages and disadvantages of the job. Most of the included information applies equally to the United States as to Canada.

22. *Handbook of Transportation in America.* Author: Charles Lunz; Published by: Popular Library, 355 Lexington Avenue, New York, N.Y. 10017; 1971.

Discusses rail, motor, air and water transportation. The emphasis is on their historical backgrounds and the Federal Government's regulation of each.

23. *Highway Safety Occupational Opportunities.* Highway Users Federation for Safety and Mobility, Washington, D. C. 20036; 1970; 372 pages.

Outlines what the field of highway safety offers in occupational opportunities. Covers occupations in driver and traffic safety education, emergency medical services, highway safety programs administration, police traffic services, traffic engineering, and traffic law and records.

24. *Highway Safety Occupational Program Development Guide.* Authors: Ronald Daugherty, W. Kent Brooks and Carroll R. Hyder. Published by: Center for Vocational & Technical Education, Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210; 1971.

This book presents an overview of the field of highway safety, including eleven occupations in this area which appear to have the greatest potential. It also includes curriculum materials.

25. *An Introduction to Aerospace Education.* Editor: Mervin K. Strickler, Jr.; Published by: New Horizons Publishers, Inc., Chicago, Ill.; 1968.

Programs and activities for introductory aerospace education at all grade levels. Bibliography.

26. *Job Guide For Young Workers.* Prepared by: Manpower Administration, U. S. Training & Employment Service; Distributed by: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

Includes information on such matters as obtaining jobs, but the greater part of it is devoted to descriptions of 150 occupational groups frequently entered by youth after they graduate from high school. Jobs in the transportation field are included.

27. *Materials For Occupational Education: An Annotated Service Guide.* Author: Patricia Schuman, Published by: R. R. Bowker Company, Order Department, P.O. Box 1807, Ann Arbor, Michigan 48106; 250 pages.

This book lists 600 organizations, associations, government agencies and companies which publish instructional materials relating to occupational education. There is a section on Traffic and Transportation.

28. *Modern Transportation Economics.* Author: Hugh S. Norton, Published by: Charles E. Merrill Publishing Company, 1300 Alum Creek Drive, Columbus, Ohio 43216; 1971.

This book is divided into five sections. Part I presents an over-all view of the transportation industry. Part II discusses the production of (and demand for) transportation service. Parts III and IV discuss regulatory and policy issues. Part V considers certain broad aspects of current policy problems.

29. *Motor Carrier Safety Regulations.* Prepared by: U. S. Department of Transportation, Distributed by: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; 1971.

This booklet is the most authorative source of information regarding regulations which govern motor carriers in general.

30. *Occupations and Careers.* Authors: S. Norman Feingold and Sol Swordloff. Published by: McGraw-Hill Book Company, 330 West 42nd Street, New York, N.Y. 10036; 1969.

Intended to help young people explore the world of work. The first part of the book tells the student why he should study occupations, how he should go about it, and why it is important that he learn about himself. The second part is divided into chapters which explore broad occupational groups.

31. *Occupational Outlook Handbook, 1972-73 Edition.* Prepared by: Bureau of Labor Statistics, U. S. Department of Labor, Distributed by: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

This book serves as a comprehensive and basic service of occupational data. The elements included are: the nature of work involved in each occupation; the places of employment; training, other qualifications, and advancement; the employment outlook; earnings and working conditions; and sources of additional information.

32. *Occupations in Transportation.* Author: Wiley B. Lewis; Published by: ERIC Clearinghouse on Vocational and Technical Education, The Center for Vocational and Technical Education, Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210; 1970; Free.

This report focuses upon job openings. Five categories are covered: Air, motor vehicle, pipeline, radio and water transport.

33. *Opportunities in Traffic Engineering.* Author: Carlton C. Robinson; Published by: Vocational Guidance Manuals, 235 E. 45th St., New York, N.Y., 10017; 1966.

Lists opportunities, required education, where to get it and additional information sources. Bibliography.

34. *The Parent's Role in Career Development.* Authors: Dale L. Knapp and James H. Bedford; Published by: The National Vocational Guidance Association, 1605 New Hampshire Avenue, N.W., Washington, D. C. 20009; 1967.

Parents inevitably influence the developing attitudes and choices of their children. This booklet has been designed to focus attention on that influence and the way it may be used wisely in furthering the vocational development of young people.

35. *Planning Your Future, Look First At The Retail Automotive Business.* Prepared and published by: General Motors Career Program Service Section, General Motors Corporation, Room 8-151, General Motors Building, 3044 W. Grand Blvd., Detroit, Michigan 48202; Free.

This pamphlet is written for the student. It presents an overview of the retail automotive business — sales, service, parts, office and general management.

36. *Safety Specialist Manpower: Manpower Requirements.* Prepared by: Booz Allen & Hamilton, Inc., Published by: National Highway Safety Administration Bureau, U. S. Department of Transportation, 400 Seventh Street, S.W., Washington, D. C. 20590; 1968.

Four separate volumes. Volume I deals with manpower requirements for state highway safety programs and outlines the types and numbers of jobs involved. Volume II presents estimates of manpower resources in both state and national terms. Volume III presents data on safety manpower training programs. Volume IV summarizes the other volumes and presents recommendations to assure adequate staffing of highway safety programs.

37. *Subject Guide To Books In Print.* Published by: R. R. Bowker Company, Order Department, P.O. Box 1807, Ann Arbor, Michigan 48106.

This periodically updated volume is the source to turn to when you need a list of currently available books on any transportation topic. It is available in all public libraries.

38. *The American Motor Transport Industry.* Author: N. Curry; Published by: Bellman Publishing Company, P.O. Box 172, Cambridge, Massachusetts; 1956; 40 pages; Free.

This vocational monograph outlines the history of the motor industry, its importance to society, employment opportunities, nature of the work, education and probable earnings.

39. *The American Railway Industry.* Author: C. J. Corliss; Published by: Bellman Publishing Company, P.O. Box 172, Cambridge, Massachusetts; 1955; 26 pages.

Somewhat briefer than the foregoing one about the American Motor Transport Industry but presents substantially the same information relating to our railroad industry.

40. *The Search For Air Safety.* Author: Stephen Barley; Published by: William Morrow & Company, Inc., 125 Madison Avenue, New York, N.Y. 10016; 1970.

This book will introduce the young person to both "aircrash detectives" and a wide variety of aircraft accidents that have occured all over the world.

41. *Trains.* Author: Robert S. Henry; Published by: Bobbs-Merril Company, 4300 W. 62nd Street, Indianapolis, Indiana 46268; 1954; 134 pages.

Deals with the past and present of American railroads. Much of the story is told through pictures.

42. *Transportation Careers.* Author: James Toedtman; Published by: Delta Nu Alpha Transportation Fraternity, 15017 Detroit Avenue, Cleveland, Ohio 44107; 1973.

Presents material to facilitate career choice as well as educational and informational sources. A good, short introduction to careers in transportation.

43. *Transportation Statistics In The United States.* Prepared by: U. S. Interstate Commerce Commission; Distributed by: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

This book contains a vast array of statistics on the following: Railroads; Sleeping Car Companies; Railway Express Agency; Electric Railways; Carriers by Water; Oil Pipe Lines; Motor Carriers; Freight Forwarders; and Private Car lines.

44. *Transportation: Managing Man On The Move.* Author: Paul M. Danforth; Published by: Doubleday & Co., Inc., 277 Park Avenue, New York, N.Y., 10017; 1970; 192 pages.

One of the Doubleday Science Series. Its emphasis is upon untangling the congestion and frustrations involved with transportation today.

45. *U. S. Department of Transportation - Facts and Functions.* Available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., Stock Number 5000-0049.

Booklet describing the U. S. Department of Transportation and its operating administrations. A good introduction to government's role in transportation.

46. *Vocational Guidance Manuals.* Published by: Vocational Guidance Manuals, Inc., 235 E. 45th Street, New York, N.Y. 10017.

These manuals deal with specific career fields in a concise but comprehensive way. Usually individual manuals will exceed 100 pages in length. Topics in each will range from a general survey of the field, its organization, duties of various types of personnel, qualifications required, advantages and disadvantages of these careers, earnings and opportunities for advancement. Several deal with transportation. (Examples: "Opportunities in the Merchant Marine" and "Opportunities In Motor Transportation").

47. *Your Career In Transportation.* Author: Robert A. Liston; Published by: Julian Messner, Inc., 1 West 39th Street, New York, N.Y. 10018; 1966.

This book discusses the major areas of transportation, their development, their present competitive positions, and their potential for future growth. Career opportunities receive considerable emphasis.

48. *Your Future as an Airline Stewardess.* Author: Patricia Rudolph
Your Future as a Pilot. Author: Kimball Scribner
Your Future in Aerospace Technology. Author: L. D. Ely
Your Future in Railroading. Author: Thomas M. Goodfellow
Your Future in Traffic Management. Author: Robert E. Heine
Your Future in Trucking. Author: Eskow
Your Future in the Merchant Marine. Author: Gordon McLintock
Your Future in the Automotive Industry. Author: Dawson Taylor
Published by: Richards Rosen Press, 29 East 21st Street, New York, N.Y. 10010.

These books give in-depth studies of each area including job operations, educational requirements, how to get a job, life styles of workers, lists of associations, schools and unions, etc. Excellent books for the library. All have extensive bibliographies.

FILMS AND FILMSTRIPS

1. *Aerospace.* Filmstrip and Record. Aero Products Research, 11201 Hindry Avenue, Los Angeles, California 90045.

2. *The Air Jam.* University of Illinois, Urbana, Illinois 61801; 1968; 25 minutes; 16mm.

3. *Air Series.* pp. 91-2, 1969 catalog, U. S. Government films. National Audiovisual Center, Washington, D. C. 20409; 16mm.

4. *Air Transportation Jobs For You.* Filmstrip (57 frames). Minneapolis Public Library, Audiovisual Department, 300 Nicollet Avenue, Minneapolis, Minnesota 55401; 35mm.

5. *Aircraft Accident Investigation.* (TF 1-8150) Department of the Navy, Chief of Industrial Relations, Code 500, Pentagon Annex #1, Room 554, Washington, D. C. 20302; 37 minutes; 1957.

6. *Aircraft Piston Engine Ignition and Spark Plugs.* Filmstrip. Produced by Champion Spark Plug in cooperation with the FAA; 36 minutes.

7. *Airplanes: A First Film.* University of Illinois, Urbana, Illinois 61801; 1970; 11 minutes; 16mm.

8. *Airplanes: How They Fly.* Indiana University, Bloomington, Indiana 47401; 10 minutes; 16mm.

9. *Airplanes: Principles of Flight.* Indiana University, Bloomington, Indiana 47401; 10 minutes; 16mm.

10. *Airplanes Work For Us.* University of Illinois, Urbana, Illinois 61801; 1960; 11 minutes; 16mm.

11. *Airport Passenger - Flight 376.* Filmstrip. Academy Films, 748 No. Seward Street, Hollywood, California 90038; 1969; $3.50.

12. *Airport Passenger Service.* (PTS6) Filmstrip, primary intermediate level. Churchill Films, 662 North Robertson Boulevard, Los Angeles, California 90069; 1970; $39.00.

13. *All The Facts.* National Cash Register, Audio Visual Services, Marketing Educations and Publications, Dayton, Ohio 45409; 9 minutes.

14. *American Road.* University of Illinois, Urbana, Illinois 61801; 1953; 39 minutes; 16mm.

15. *At the Other End of the Mike.* Federal Aviation Administration Film Library, P.O. Box 25802, Oklahoma City, Oklahoma 73125; 1961; 10 minutes; 16mm.

16. *Aviation Mechanic.* Federal Aviation Administration Film Library, P.O. Box 25802, Oklahoma City, Oklahoma 73125; 20 minutes; 16mm.

17. *Aviation - Where Career Opportunities Are Bright.* Filmstrip, 152 frames, accompanying two side 33 1/3 rpm record. Counselor Slides. National Aerospace Education Association, 806 15th Street, N.W., Washington, D. C. 20005; $10.00.

18. *Behind the Scenes at the Airport.* University of Minnesota, Department of Audiovisual Extension, 2037 University Avenue, S.E., Minneapolis, Minnesota 55455; 10 minutes.

19. *Bio-Tech Teaching Modules* - Various Media. American Institute of Biological Sciences, 3900 Wisconsin Avenue, N.W., Washington, D. C. 20016.

20. *Bus and Truck Terminal: Who Works There.* Filmstrip. Intermediate High School Level. Bailey Film Association, 11559 Sana Monica Boulevard, Los Angeles, California 90025; 1969; $13.25.

21. *The Bus Driver.* Encyclopedia Britannica Films, 1150 Wilmette Avenue, Wilmette, Illinois; 10 minutes.

22. *Bus and Truck Terminal: What You'd See There.* Filmstrip. Intermediate High School Level. Bailey Film Association, 11559 Sana Monica Boulevard, Los Angeles, California 90025; 1969; $13.25.

23. *Business Machine Operations.* Mountain Plains Educational Media Council, University of Colorado, Bureau of Audio-visual Instruction, Boulder, Colorado 80302; 7 minutes.

24. *By Land, Sea and Air.* Stevan H. Wodka, Antioch College, Yellow Springs, Ohio; 31 minutes; 16mm.

25. *Career Opportunity in Highway Safety.* Filmstrip, 226 frames. Highway Users Federation for Safety and Mobility, Highway Safety Division, 1776 Massachusetts Avenue, N.W., Washington, D. C. 20036;35 minutes. Filmstrip and 34 minute cassette tape narration, $14.00.

26. *Careers: Clerical.* Syracuse University, Film Rental Library, 1455 East Calvin Street, Syracuse, New York 13210; 9 minutes.

27. *Careers In Business.* National Career Center, 3839 White Plains Road, Bronx, New York 10467; 13 minutes.

28. *Careers In Computers and Data Processing.* Control Data Corporation, 8100 34th Avenue South, Minneapolis, Minnesota 55420; 15 minutes.

29. *Career Opportunities in Highway Safety.* Highway Users Federation for Safety and Mobility, 1776 Massachusetts Ave., N.W., Washington, D. C. 20036; 34 minutes; 35mm filmstrip and cassette tape program.

30. *Careers in Transportation.* American Personnel and Guidance Association, 1607 New Hampshire Ave., N.W., Washington, D.C. 20009; 24 minutes; 16mm.

31. *Cities in Crisis - Transportation.* Universal Education and Visual Arts, 221 Park Avenue, South, New York, New York 10003; 18 minutes; 16mm.

32. *Cities - The Rise of New Towns.* National Educational Television, Indiana University, Bloomington, Indiana 47401; 2 parts - 30 minutes each; 16mm.

33. *Civil Engineer-Maintenance Safety.* (FTA 532) Department of the Air Force, Air Force Film Library Center, 8900 South Broadway, St. Louis, Missouri 63125; 1961; 10 minutes.

34. *Combustion: An Introduction to Chemical Change.* General Motors Corporation, 3044 West Grand Boulevard, Detroit, Michigan 48202; 16 minutes; 16mm.

35. *The Computer at Work.* General Electric Educational Films, 60 Washington Avenue, Schenectady, New York 12305; 1970; 12 minutes; 16mm.

36. *Computer Comes to Marketing.* Data Processing Management Assoc., 505 Busse Avenue, Park Ridge, Illinois 60068.

37. *The Computer Revolution.* BFA Educational Media, 2211 Michigan Avenue, Santa Monica, California 90404; 1968; 24 minutes; 16mm.

38. *Conduct of a Nuclear Safety Survey.* (TFI-5429) Department of the Air Force, Air Force Film Library Center, 8900 South Broadway, St. Louis, Missouri 63125; 1961; 30 minutes; 16mm.

39. *Developments of Transportation.* Indiana University, Bloomington, Indiana 47401; 11 minutes; 16mm.

40. *Driving the Semi-Trailer.* National Audiovisual Center, Washington, D. C. 20409; 19 minutes; 16mm.

41. *Essentials of Drafting.* Aims Instructional Media Service, P. O. Box 1010, Hollywood, California 90028; 1970; Film I - 11 minutes; 16mm. Film II - 7 minutes; 16mm.

42. *Firefighting Aboard Tankers.* United States Coast Guard, Chief, Public Information Division, Coast Guard Headquarters, Washington, D. C. 20591; 28 minutes; 16mm.

43. *Freight Train.* University of Illinois, Urbana, Illinois 61801; 1954; 11 minutes; 16mm.

44. *From the Ground Up.* Federal Aviation Administration Film Library, P. O. Box 25802, Oklahoma City, Oklahoma 73125; 27 minutes; 16mm.

45. *From Tanker to Fueler.* University of Illinois, Urbana, Illinois 61801; 1967; 18 minutes; 16mm.

46. *Gasoline Age: History of Transportation.* Indiana University, Bloomington, Indiana 47401; 14 minutes; 16mm.

47. *Helicopter.* Indiana University, Bloomington, Indiana 47401; 11 minutes; 16mm.

48. *Highways Are For People.* National Audiovisual Center, Washington, D. C. 20409; 27 minutes; 16mm.

49. *History of Road Transport, Part I, Early Times to 18th Century.* Filmstrip. Intermediate College Level. Carman Education Association, Inc., Box #205, Youngstown, New York 14174; 1969; $4.50.

50. *History of Road Transport, Part II, Turnpike and the Coaching Age.* Filmstrip. Intermediate College Level. Carman Education Association, Inc., Box #205, Youngstown, New York 14174; 1969; $4.50.

51. *In These Hands.* FA-123. 23 minutes. The role of electronic maintenance and the workers involved. Semi-technical.

52. *Inland Waterways in the Development of American Transportation.* University of Illinois, Urbana, Illinois 61801; 16 minutes; 16mm.

53. *Investigation of a Claim.* (TR 15-2999) Military District of Washington, Central Film and Equipment Exchange, Fort Meyer, Virginia 22211; 1961; 35 minutes; 16mm.

54. *Jobs and Advancement - On the Move.* McGraw-Hill Textfilm, 330 West 42nd Street, New York, New York 10036; 1969; 13 minutes; 16mm.

55. *Jobs and Continuing Education.* McGraw-Hill Textfilm, 330 West 42nd Street, New York, New York 10036; 1969; 12 minutes; 16mm.

56. *The Long Haul Men.* University of Illinois, Urbana, Illinois 61801; 1969; 18 minutes; 16mm.

57. *Long Ships Passing.* Lake Carriers' Association, 1411 Rockefeller Building, Cleveland, Ohio 44113; 1967; 32 minutes; 16mm.

58. *Looking Ahead To A Career.* Filmstrips/Slide Presentations. U. S. Department of Labor, Washington, D. C. Available as either a film strip or set of 35mm slides with an accompanying narrative. Set consists of 36 frames and is available from any regional office of the Department of Labor. Cost of the film strip set is $5.00 and $10.00 for the slide set.

59. *Mainline, U.S.A.* University of Illinois, Urbana, Illinois 61801; 1957; 20 minutes; 16mm.

60. *Man In Flight.* University of Illinois, Urbana, Illinois 61801; 1958; 31 minutes; 16mm.

61. *Management By Objectives.* BNA Films, Division of the Bureau of National Affairs, Inc., 5615 Fishers Lane, Rockville, Maryland 20852. Rental Charge: $50.00 per week per film. Purchase Price: $350.00 per print.

62. *Marketing As A Career.* CCM Films, 866 Third Avenue, New York, New York 10022.

63. *Mass Transit: Up, Up and Away.* Document Associates, 573 Church Street, Toronto 285, Ontario, Canada; 22 minutes; 16mm.

64. *The Masters.* 12 minutes. Association Films. Shows maintenance of jet airliners, the mechanics at work, and their methods and tools.

65. *Merchant Marine Safety.* United States Coast Guard, Chief, Public Information Division, Coast Guard Headquarters, Washington, D. C. 20591; 1960; 28 minutes; 16mm.

66. *Montage of Marketing.* University of Wisconsin, Bureau of Audio Visual Instruction, Audio Visual Center, LaCrosse, Wisconsin 54601.

67. *The New Breed.* Sales-Development Department, Japan Air Lines, Ltd., 240 Stockton Street, San Francisco, California 94108; (Loan Basis) 16mm.

68. *The Operator and His Job.* U. S. Office of Education, Washington, D. C. 20202; 12 minutes; 16mm.

69. *Railroads and The Clothes We Wear.* 23 frames, free filmstrip. Association of American Railroads, School and College Service, Transportation Building, Washington, D. C. 20006.

70. *Railroads Are People, Too.* Primary Intermediate Level. Coronet Instructional Films, 65 East South Water Street, Coronet Building, Chicago, Illinois 60601; 1970; $10.50.

71. *Railroads: End of the Line.* Indiana University, Bloomington, Indiana 47401; 58 minutes; 16mm.

72. *Ready For Flight.* Modern Talking Picture Association; 28 minutes. 16mm.

73. *Safety and Supervision.* Director of Safety, Office of the Secretary, Department of Commerce, Washington, D. C. 20230; 1961; FS-35 minutes; 16mm.

74. *Sails of Exploration.* University of Illinois, Urbana, Illinois 61801; 1966; 16 minutes; 16mm.

75. *Salesmanship.* Cassettes. Benjamin Bills and Associates, Glenview, Illinois.

76. *Ships: A First Film.* University of Illinois, Urbana, Illinois 61801; 1970; 11 minutes; 16mm.

77. *Technicians of Tomorrow.* U. S. Office of Education, 400 Maryland Avenue, S.W., Washington, D. C. 20202; 1966; 20 minutes; 16mm.

78. *They Steamed To Glory: Famous Locomotives and the Pioneer Development of America.* University of Illinois, Urbana, Illinois 61801; 1961; 22 minutes; 16mm.

79. *To Market, To Market.* Frith Films, Box 424, 1275 Lincoln Avenue, Carmel Valley, California 93924; 16mm.

80. *Transportation.* Southwest College, Learning Resource Center, 7500 S. Pulaski, Chicago, Illinois 60652; 30 minutes; 16mm.

81. *Transportation.* National Audiovisual Center, Washington, D. C. 20409; 1966; 22 minutes; 16mm.

82. *Transportation Around the World.* University of Illinois, Urbana, Illinois 61801; 1969; 10 minutes; 16mm.

83. *Transportation By Air.* University of Illinois, Urbana, Illinois, 61801; 1958; 15 minutes; 16mm.

84. *Transportation By Freight Train.* Indiana University, Bloomington, Indiana 47401; 10 minutes; 16mm.

85. *Transportation By Land.* University of Illinois, Urbana, Illinois 61801; 1957; 11 minutes;16mm.

86. *Transportation By Water.* Indiana University, Bloomington, Indiana 47401; 15 minutes; 16mm.

87. *Transportation: Footpath To Air Lanes.* University of Illinois, Urbana, Illinois 61801; 1965; 16 minutes; 16mm.

88. *Transportation In Eastern Europe.* Intermediate High School Level. Doubleday Multimedia, 1370 Reynolds Avenue, Santa Ana, California 92705; 1969; 4 minutes; $19.50; S-8mm.

89. *Transportation In Middle America.* Intermediate High School Level. Doubleday Multimedia, 1370 Reynolds Avenue, Santa Ana, California 92705; 1969; 4 minutes; $19.50; S-8mm.

90. *Transportation Underground - The Story of a Pipeline.* Indiana University, Bloomington, Indiana 47401; 27 minutes; 16mm.

91. *Transportation, U.S.A.* New York Times Office of Educational Activities, New York, New York 10036; 1964; (filmstrip - 53 frames); 35mm.

92. *Truck Transport - On the Long Haul.* University of Illinois, Urbana, Illinois 61801; 1954; 11 minutes; 16mm.

93. *Vehicle Emissions Control Story.* Automobile Manufacturers Association, Detroit, Michigan; 4 reels, 25 minutes each; 16mm.

94. *Waterways.* National Audiovisual Center, Washington, D. C. 20409. 16mm.

95. *Weather Series.* pp. 115-6, 1969 catalog, U. S. Government Films. National Audiovisual Center, Washington, D. C. 20409; 16mm.

96. *Your Driving Habits.* National Audiovisual Center, Washington, D. C. 20409; 15 minutes; 16mm.

PERIODICALS

Upon request most of these publications will send sample copies to schools or teachers:

1. *Alphian.* 4786 S. W. Elm Lane, Portland, Oregon 97721; Monthly.

   The publication of Delta Nu Alpha Transportation Fraternity. It is for transportation management officials throughout the country.

2. *Airport World.* 109 East 36th Street, New York, N.Y. 10016; Monthly.

   Directed toward major airport operators, air carriers, caterers, ground support crews — in fact, all airport users except passengers.

3. *Air Transport World.* 333 Shoreham Building, Washington, D.C. 20005; Monthly.

   This is intended to interest air transport operators, airline management, and airport management.

4. *Air Travel Magazine.* 211 East 43rd Street, New York, N.Y. 10017; Monthly.

   Magazine for travel agents, corporate traffic managers and airline sales personnel.

5. *Automotive Fleet.* 1155 Waukegan Road, Glenview, Illinois 60035; Monthly.

Aimed at automotive fleet managers. It is concerned with commercial, leased and rental fleets.

6. *Automotive News.* 965 Jefferson, Detroit, Michigan 48207; Weekly.

   Specializes in the automobile markets and the concerns of new and used car dealers.

7. *Bell Helicopter News.* P. O. Box 482, Fort Worth, Texas 79901; Bi-weekly.

   This features brief articles relating to helicopters at work.

8. *Better Driving.* Employers Insurance of Wausau, 2000 Westwood Drive, Wausau, Wisconsin 54401; Quarterly.

   Journal for motorists and professional drivers. It features a wide range of articles oriented toward better driving and motor safety.

9. *Business on Wheels.* 2000 York Road, Oak Brook, Hinsdale, Illinois 60523; Quarterly.

   Distributed to owners and operators of truck fleets, both common-carrier trucking systems and trucks used in connection with businesses of various types.

10. *Career Education Communicator.* National Center for Occupational Education, Box 5096, Raleigh, North Carolina 27607; Quarterly.

11. *Career Education News.* McGraw-Hill Institutional Publications, 230 West Monroe Street, Chicago, Illinois 60606; Bi-Monthly.

12. *Cars & Trucks.* 2000 K Street, N.W., Washington, D. C. 20006; Monthly.

    The official publication of the National Automobile Dealers Association. It focuses on management, sales, merchandising and service operations with new car and truck dealerships.

13. *Commercial Car Journal.* 56th & Chestnut Streets, Philadelphia, Pennsylvania 19139; Monthly.

14. *Current Literature in Traffic and Transportation.* Transportation Center Library, Northwestern University, 1810 Hinman Avenue, Evanston, Illinois 60204; Monthly.

Lists currently available books, periodicals, films, etc. with prices, availability and publishers' names and addresses. This library also lends materials to schools and has a copy service.

15. *FWD News*. c/o FWD Corporation, Clintonville, Wisconsin 54929; Quarterly.

    This is for users of heavy-duty all-wheel trucks.

16. *Imperial Oil Fleet News*. 111 St. Claire Avenue, Toronto 195, Ontario, Canada; Quarterly.

    Issued to seamen of Imperial Oil tankers and deals with various aspects of this company's tanker fleet.

17. *Interline Reporter*. 2 West 46th Street, New York, N.Y. 10036; Monthly.

    This magazine publishes non-technical articles on airline activities. The publication is slanted to sales, reservations and counter personnel.

18. *Modern Bulk Transporter*. 4801 Montgomery Lane, Washington, D.C. 20014; Monthly.

    Deals exclusively with the tank truck industry but covers it very thoroughly.

19. *Open Road*. 1051 Florence Street, Fort Worth, Texas 76102; Monthly.

    This is a publication for the professional over-the-road truck drivers of this country.

20. *Refrigerated Transporter*. 1602 Harold Street, Houston, Texas 77006; Monthly.

    Features articles on the maintenance of vehicles, especially refrigerated vans and refrigerating units; the loading or handling of frozen or refrigerated cargo; and new equipment in refrigerated transportation.

21. *Road Ahead*. Peterson, Howell & Heather, Inc., 2701 N. Charles St., Baltimore Maryland 21218; Monthly.

    This focuses on automobile maintenance, automobile fleet leasing, and safe driving.

22. *Rotor and Wing.* News Plaza, Peoria, Illinois 61601; Monthly.

Features stories on the commercial use of STOL craft and helicopters.

23. *Sikorsky News.* Stratford, Connecticut 06602; Monthly.

This features articles on both the commercial and military use of helicopters.

24. *Southern Motor Cargo Magazine.* P. O. Box 4169, Memphis, Tennessee 38104; Monthly.

For trucking management and maintenance personnel of private, contract and for-hire carriers in 16 southern states and the District of Columbia.

25. *Tigerview.* c/o Flying Tiger Line, 7401 World Way West, Los Angeles, California 90009; Monthly.

This deals with literally every aspect of the airfreight industry.

26. *Traffic World.* Traffic Service Corporation, 815 Washington Building, Washington, D. C. 20005; Weekly.

27. *Transport Topics.* American Trucking Association, Inc., 1616 P Street, N.W., Washington, D. C. 20036; Weekly.

This newsmagazine deals with the motor carrier industry. It includes articles dealing with matters both technical and legislative. Also included is a classified advertising section which lists employment opportunities and situations wanted.

28. *Transportation & Distribution Management.* 815 Washington Building, Washington, D. C. 20005; Monthly.

Features articles dealing with new equipment, management innovations, computer applications, and other aspects of transportation and physical distribution management.

29. *Truck Transportation.* 203 Adelaide Street West, Toronto 1, Canada; Monthly.

This is a news magazine for companies engaged in heavy trucking and the operation of truck fleets.

30. *U. S. Transport*. 5611 Columbia Pike, Falls Church, Virginia 22041; Monthly.

A tabloid which deals with literally every aspect of transportation news, whether within a specific mode or of across-the-board interest.

31. *Vickers Voice*. P. O. Box 2240, Wichita, Kansas 67201; Monthly.

Specializes in the fields of service station ownership and managership.

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